



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

446 Neal Street  
Cookeville, TN 38501

May 14, 2004

Lt. Colonel Jack V. Scherer  
District Engineer  
U.S. Army Corps of Engineers  
167 North Main Street, Room B-202  
Memphis, Tennessee 38103-1894

Attention: Mr. Danny Ward, Environmental Branch

Dear Colonel Scherer:

The Fish and Wildlife Service (Service) has prepared this draft Fish and Wildlife Coordination Act Report for the Northwest Tennessee Regional Harbor study. This report is provided in partial fulfillment of the requirements in Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat., 401, as amended; 16 U.S.C. 661 et seq.).

Throughout the planning process, we have worked with members of your staff to help develop a project that would reduce fish and wildlife resources impacts as much as possible. We believe the present plan, with our recommendations incorporated, would be feasible and still obtain a positive benefit/cost ratio. However, close monitoring will be necessary during work to insure compliance with the mitigative recommendations presented in our report.

We appreciate the opportunity to review, comment, and make recommendations on the proposed project and look forward to continued close coordination and cooperation on this and other projects.

Sincerely,

Lee A. Barclay, Ph.D.  
Field Supervisor

**DRAFT**

**FISH AND WILDLIFE COORDINATION ACT REPORT**  
**for the**  
**NORTHWEST TENNESSEE REGIONAL HARBOR PROJECT**

**May 2004**

Prepared by the Tennessee Field Office  
U.S. Fish and Wildlife Service  
Cookeville, Tennessee

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## **INTRODUCTION AND BACKGROUND**

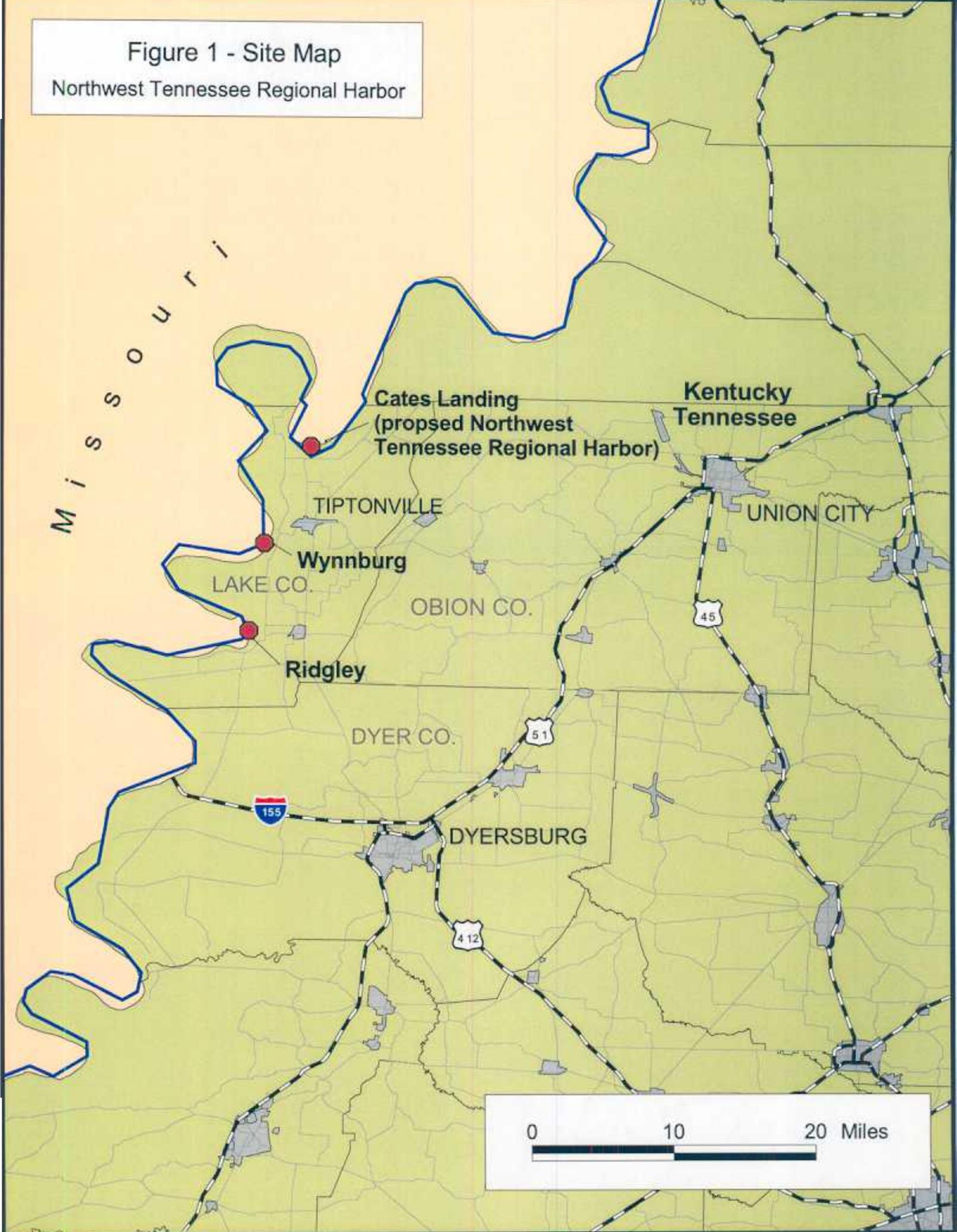
This Draft Fish and Wildlife Coordination Act (DFWCA) 2(b) report addresses the Northwest Tennessee Regional Harbor Study which was authorized under Section 107 of the River and Harbor Act of 1960. This act gives authority to the Corps of Engineers (Corps) to construct, operate, and maintain small river and harbor improvement projects. The House of Representatives, Energy and Water Development Appropriations Bill, 2001, Report 106-693, Small Navigation Projects (Section 107) provided monetary resources for the design of the Northwest Tennessee Regional Harbor Project. This DFWCA has been prepared in accordance with Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat., 401, as amended; 16 U.S.C. 661 et seq.) and is consistent with the Service's authorities under the Migratory Bird Treaty Act (16 U.S.C. 703-712) and the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.). The Fish and Wildlife Service's (Service) recommendations and information provided in this report are derived primarily from previous reports received from the Corps. Mitigation recommendations are based where possible on the Corps' Habitat Evaluation System (HES) and/or the Service's established mitigation policies.

Three potential sites (Figure 1) were located in the northwest section of Tennessee that could potentially support harbor facilities and an associated industrial area. The Tennessee Department of Economic and Community Development (TN ECD) and the local sponsor (Northwest Tennessee Regional Port Authority) were responsible for preliminary investigation of these three potential areas. The preliminary investigations included flood frequency analysis based on 100-year flood maps, wetland analysis based on National Wetland Inventory Maps, and inquiries to the Tennessee Department of Environment and Conservation Division of Archaeology, Division of Natural Heritage, Division of Solid Waste, Division of Superfund, Division of Underground Storage Tanks, and Tennessee Historical Commission.

Site one, west of Ridgely, Tennessee, was located at Mississippi River Mile 858. This site would utilize an existing slack water area and the industrial site would be protected from flooding by the Mississippi River Mainline levee. Fill would be required along the harbor to raise the area above the 100-year floodplain and wetlands would be lost from harbor dredging and fill associated with port development. The Division of Archaeology noted that one archaeological site appears to be significant in the industrial area.

Site two, near Wynnburg, Tennessee, was located at approximate Mississippi River Mile 870. Fill would have been needed to raise the on/off loading area above the 100-year floodplain. The industrial site at this location would also be protected from flooding by the Mississippi River Mainline levee. Wetlands would also be lost from harbor dredging and fill associated with port development. The Division of Archaeology noted that five archaeological sites in the area could be impacted by harbor construction and the industrial area development.

Figure 1 - Site Map  
Northwest Tennessee Regional Harbor



Site three, also known as Cates Landing, is located north of Tiptonville, Tennessee, near Mississippi River Mile 900. Cates Landing is a seasonal backwater area. This site is the only site located in west Tennessee on the Mississippi River, apart from Memphis, which is directly on the river but above the 100-year floodplain. The proposed industrial area naturally would occur above the 100-year floodplain, so levee protection is not required.

Cates Landing was historically open for navigation. A Corps concrete mat casting facility was located on the site. Concrete mats were loaded on to barges at this site and used for bank stabilization purposes in this region of the river. The facility was closed in 1983 because bank stabilization along this portion of the river was nearing completion and it was no longer feasible to keep the area open for navigation. The area has continued to silt in over time due to the construction of a large wing dike complex located north of the area. The wing dike complex protects the area from direct Mississippi River flows much of the year except at high river stages.

The Reelfoot/Lake County Chamber of Commerce and Lake County received a Department of Army Permit to construct a harbor at the Cates Landing site in 1991. This permit involved the dredging of 525,000 cubic yards of material along 1.5 miles of Slab Fill Shute to create a harbor 100 feet wide and nine feet deep. A 300-foot turning basin would also be dredged in the Old Slough Landing. The Old Slough Landing is a seasonally flooded area west and north of the proposed harbor that is dominated by black willow (*Salix nigra*) at various stages of succession. Dredged material would also be placed behind the dike field located to the north of the project. The permit was modified in 1992 to a 200-foot bottom width design. State water quality certification was terminated in 1993 because appropriate fees were not furnished.

TN ECD studied the area in 1995 to determine if it would be practical to reopen the harbor at this location. Wetlands would be lost from dredging the harbor. However, no fill would be necessary for the construction of the port facility. Therefore, no wetlands would be impacted by site development. The Division of Archaeology expressed concerns about the historic town of Cronanville as well as likely prehistoric Indian sites.

The Cates Landing site was chosen as the proposed harbor site because the area was historically open for navigation purposes, had a prior Corp permit and State of Tennessee Water Quality Certification for construction of a harbor, the unique elevation of the site, and requested by the local sponsor. The associated proposed industrial area would be located above the 100-year flood plain.

## **PROJECT DESCRIPTION**

During the feasibility process different alternatives were analyzed to achieve the optimum plan that has both a federal interest and is acceptable to the local sponsor. Six alternatives (including no action) were considered to provide river access to the proposed industrial park that would be located at Cates Landing (Table 1). All alternatives were located in the old chute of the Mississippi River and would be within the navigational

servitude and fast lands would not be created. All action alternatives were similar except for differing channel lengths and depths.

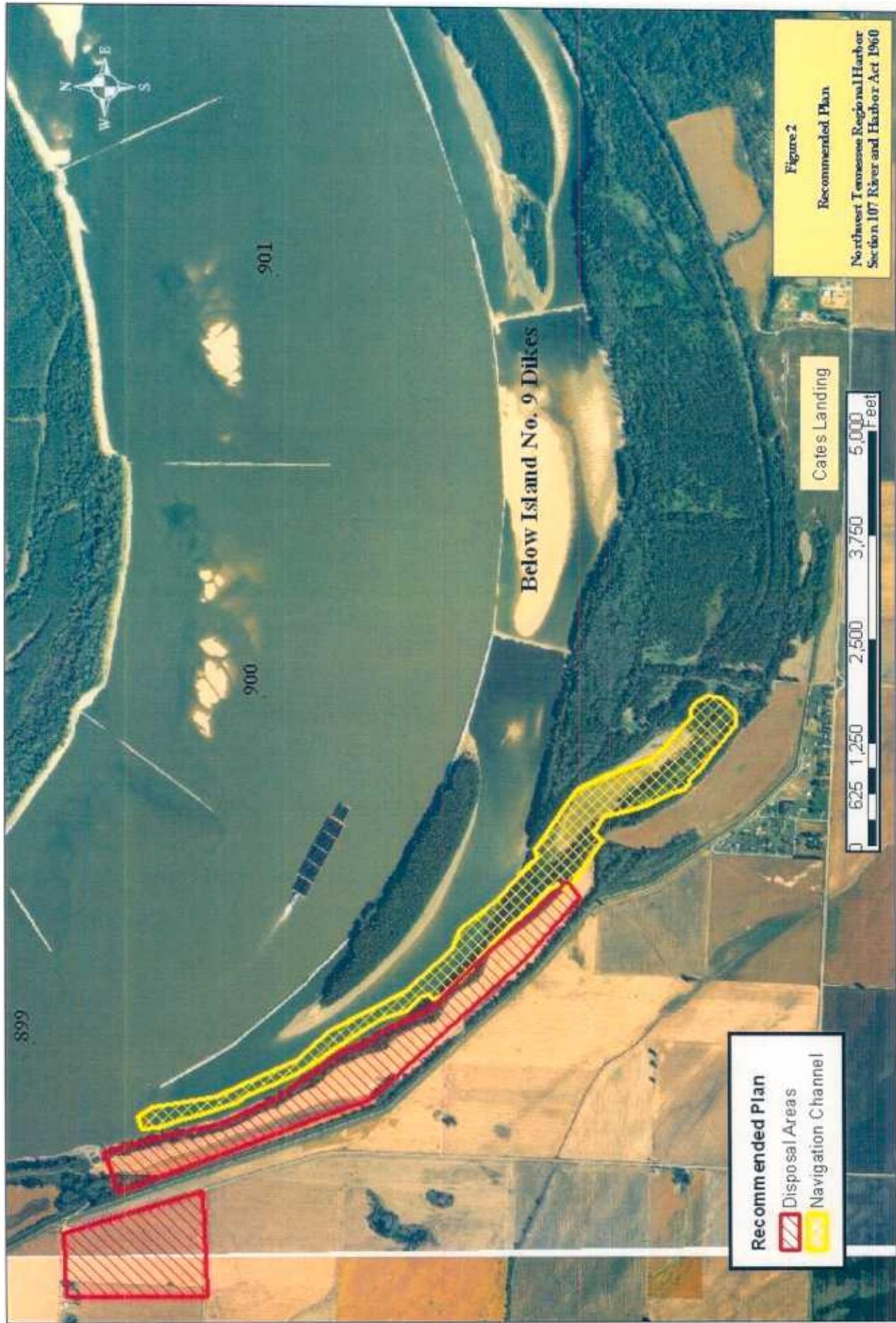
**Table 1. Alternative Plans Considered**

<b>Alternative Plans Considered</b>						
<b>Items</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
Channel Length, ft	14,000	13,8000	8,500	5,000	9,000	NA
Channel Bottom, ft	225	130	225	130	130	NA
Canal Depth, ft	9	9	9	9	9	NA
Diameter of Turning Basin, ft	None	300	None	300	300	NA
Channel Side Slopes	1V:5H	1V:5H	1V:5H	1V:5H	1V:5H	NA
Channel Excavation, cy	3.1M	2.48M	4.1M	117,000	1.02M	NA
Channel Riprap	Yes	Yes	Yes	Yes	Yes	NA
Dredge Material Disposal Area	On Land	NA				

Based on the alternative with the greatest excess benefits, Alternative 5 was selected as the recommended plan (Figure 2). The recommended plan would provide a slack-water public port having a general purpose terminal with loading and unloading capabilities for various raw and finished products onto and off barges. Approximately 44 acres have been identified as the maximum requirement for the public port allowing for ample truck, rail and equipment maneuvering area. Two buildings are proposed in master planning for the port; one an office building, the other a future transit warehouse building. These buildings would provide office space, equipment storage and maintenance space as well as some warehouse space. The master plan utilizes a rail spur allowing for direct rail-car loading and unloading at the port. Additionally a bridge crane unloading area and a liquid terminal have been included to emphasize the potential for direct service from the port to specific industrial facilities within the park.

The proposed industrial park would be constructed on 500 acres of farm land located south of Cates Landing. An additional 500 acres of farm land would be available for future expansion of the industrial park. Industrial development would require the modification of roads, construction of a railroad spur, and the construction and modification of utilities.

The channel construction would involve dredging a channel within navigational servitude. The proposed channel would be approximately 9,000 feet long, bottom width of 130 feet transitioning to 225 feet, and a 300-foot turning basin at the upstream



**Recommended Plan**  
 Disposal Areas  
 Navigation Channel

**Figure 2**  
**Recommended Plan**  
 Northwest Tennessee Regional Harbor  
 Section 107 River and Harbor Act 1960

terminus. Side slopes of the channel would be 1 vertical to 5 horizontal. Approximately 30,600 tons of riprap and 15,300 tons of filter/bedding material would be used to stabilize the banks. The harbor would cover approximately 67 surface acres.

The recommended plan would require 1.02 million cubic yards of dredging and 187,000 cubic yards of excavation. The excavation would be required for construction of disposal berms and grading of the harbor's landside slope. The dredged material would be placed seven feet high in two disposal areas adjacent to the harbor. The first area is a 39-acre site located landside of the Mississippi River Mainline levee and west of Highway 22. The second area is a 66-acre site located in the batture area. Both disposal sites are currently under agricultural production (row-cropping). Both sites would require a containment dike to be built prior to placement of any dredge or excavated material. These areas would also be used for maintenance dredging during the first five years of the project life. Additional area would be required as needed for future operations and maintenance.

The local port facility would be located on an adjacent 44-acre site at the upstream terminus. Approximately 17,000 cubic yards of fill would be required to raise the facility above the Mississippi River 100-year floodplain (308 feet above sea level). The port bulkhead would be constructed on interlocking steel pilings that would require 130,142 cubic yards of sand backfill and 16,310 cubic yards of open grade stone backfill to raise the area above the Mississippi River 500-year floodplain (313 feet above sea level). Fill would be obtained by additional dredging from appropriate areas in the Mississippi River. Additional Department of the Army Section 10 and 404 permits would be required prior to the port facility construction.

## **FISH AND WILDLIFE RESOURCES IN THE STUDY AREA**

Upland areas along the Mississippi River watershed are primarily devoted to agriculture. The river floodplain and its tributaries provide high quality refuge for a variety of wildlife including game species. Because of the extensive areas of cropland development and relatively small areas of forested upland, the floodplain forest communities are particularly important to wildlife species that require extensive forest tracts for refuge and breeding habitat. Habitat assessments performed by the Corps characterized the project site as four major habitat types. These habitat types are explained below.

**Bottomland Hardwood:** Most of the riparian areas within the project area can be characterized as bottomland hardwood habitat. This habitat type generally occurs in low-lying areas that are subject to soil saturation and repeated flooding. Mature stands typically have overstory, understory, and herbaceous ground-cover layers. Black willow (*Salix nigra*) is the dominant vegetation found in the overstory throughout the bottomland hardwood habitat. Cottonwood (*Populus deltoids*) is found on higher elevated areas on the north section of the island immediately adjacent to the river. Black willow is also the dominant vegetation in the understory. Silver maple (*Acer saccharinum*) and cottonwood are also found in the understory in a far lesser extent. Black willow is the dominant

vegetation in the herbaceous layer, with some silver maple, cocklebur (*Xanthium*), smartweed (*Polygonum*), and golden rod (*Solidago*) scattered throughout. Some wildlife species that may be found in this habitat type are white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), eastern gray squirrel (*Sciurus carolinensis*), numerous bird species, amphibians, and reptiles.

Open Agriculture: Open agriculture makes up 59% of the land cover in the project area. Major crops grown in the area appear to be soybeans, cotton, and wheat. This habitat type provides food, cover, and resting areas for wildlife species such as white-tailed deer, red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), mourning dove (*Zenaida macroura*), and the eastern bluebird (*Sialia sialis*). In addition, these areas are heavily utilized by various waterfowl species during migration periods. While large expanses of crop land may not be heavily utilized by wildlife, the value and utilization of open agricultural habitats varies depending on the crop being produced and its proximity to wetland, forested, or riverine habitat types.

Wetlands: The dominant wetland type other than the bottomland hardwood community is farmed wetlands. Approximately 14 acres of farmed wetlands are scattered across the study area. Major native plant species associated with this habitat type are herbaceous wetland species that occur seasonally during fallow periods.

Riverine: The Mississippi River is a warmwater, perennial stream that has a drainage of 1.25 million square miles. The river has a length of about 2,350 river miles from its headwaters in Minnesota to the Gulf of Mexico. The river drains approximately 41 percent of the contiguous United States including all or part of 31 states and two provinces in Canada. It is a major transportation artery that provides access to national and international markets for mid-continent producers. Riffles are infrequent and the river is characterized by the presence of long pools. The substrate consists mostly of silts and sands, and the turbidity tends to be high.

A total of 35 species of fish were collected from the river and proposed harbor area during Tennessee Wildlife Resources Agency's survey conducted September 23-24, 2003. Sampling methods included electroshocking, gill nets, seines, and trawl. The most dominant species captured was the gizzard shad (*Dorosoma cepedianum*). Other common species included longear sunfish (*Lepomis megalotis*), largemouth bass (*Micropterus salmoides*), river carpsucker (*Carpionodes carpio*), and freshwater drum (*Aplodinotus grunniens*).

### Threatened and Endangered Species

There currently are three federally listed species that could potentially be impacted by the proposed project. Following is a brief description of each species habitat needs.

Bald eagle (*Haliaeetus leucocephalus*)

The bald eagle, listed as threatened, may be found along the Mississippi River near the project area during winter. Bald eagles are common migrants in the area and are rare breeders on the Mississippi and Missouri Rivers. Reelfoot Lake, located east of the proposed project, supports one of the largest concentrations of wintering bald eagles in the eastern United States with an annual peak of 200 or more eagles from January to February. Additionally, bald eagles have also been documented as using the Reelfoot Lake area for nesting and rearing their young. Wintering eagles use larger diameter (>12-inch dbh) trees as daytime perches and night roosts. They usually perch within a riparian corridor or along lakeshores and prefer areas with limited human activity.

Interior Least Tern (*Sterna antillarum athalassos*)

The interior least tern, listed as endangered, occurs almost entirely in the lower valley south of Cairo to Vicksburg along the Mississippi River. This species spends 4-5 months at the breeding sites, arriving between late April and early October. The most preferred nesting habitat is barren sandbars, which are a common feature along the lower Mississippi River during normal river stages. The nest is a shallow and inconspicuous depression in an open, gravelly patch, or exposed flat. Least terns have been observed in the project area and nesting colonies have been documented along sandbars across the river and within five miles upstream and downstream of the proposed project.

Pallid Sturgeon (*Scaphirhynchus albus*)

The pallid sturgeon, listed as endangered, historically was found in the middle and lower Mississippi and Missouri Rivers and the lower reaches of the Platte, Kansas, and Yellowstone Rivers. Their preferred habitat is the bottom of large, turbid, relatively warm, free-flowing rivers with sand or rocky bottoms.

## **ASSESSMENT OF IMPACTS**

The major impact of the project to wildlife resources will be the loss of 74 acres of vegetated wetlands (39 acres forested, 21 acres non-forested, and 14 acres farmed). Impacts of the recommended plan were based on the Habitat Evaluation System (HES) developed by the Corps. Corps biologists utilized HES to quantify existing habitat conditions and make predictions of future habitat values in the bottomland hardwood habitat. Habitat Quality Index (HQI) values were calculated from various bottomland hardwoods locations in the study area. HQI scores ranged from a high of 50.72 in an area of the Old Slough Landing to a low of 34.10 in a recently silted in area of Slab Fill Shute. The average weighted HQI score was 37.2±. The analysis indicated that habitat value's in the project area are low due to low forest diversity, little to no mast producing trees, limited understory and ground cover, and the lack of snags. The analysis concluded that

the low habitat value of the site is most likely caused by the extreme fluctuations of the river in this location.

Impacts to wildlife resources were expressed as annualized habitat unit values (AHUV). Table 2 provides a comparison of future without the project (FWOP) and future with project (FWP) AHUV. Assumptions of the FWOP conditions were that the Old Slough Landing would continue to silt in over time and cottonwood associations, which are presently seen on the higher elevations of the Old Slough Landing, would become the dominant tree species for 55 to 60 years. As displayed in Table 2, a loss of 60 acres of wetlands would result in a net loss of 27AHUV over the life of the project. An additional 14 acres of farmed wetlands would also be impacted. The loss of 27 AHUV and 14 acres of farmed wetlands would be mitigated by planting 134 acres of proposed frequently flooded prior converted farm land within the Mississippi River floodplain.

**Table 2. Impacts of Recommended Plan, Northwest Tennessee Harbor, Lake County, Tennessee.**

<b>Year</b>	<b>FWOP</b>	<b>HQI</b>	<b>HUV</b>		<b>FWP</b>	<b>HQI</b>	<b>HUV</b>
0	606	0.37	224.22		546	0.37	202.02
10	606	0.40	242.40		546	0.40	218.40
20	606	0.43	260.58		546	0.43	234.78
30	606	0.46	278.76		546	0.46	251.16
50	606	0.52	315.12		546	0.52	283.92
		<b>Total HUV</b>	<b>13,483.50</b>		<b>Total HUV</b>		<b>12,148.50</b>
		<b>AHUV</b>	<b>269.67</b>		<b>AHUV</b>		<b>242.97</b>

Temporary impacts are expected to fishery resources from harbor construction due to an increase in turbidity and total suspended solids. These variables should return to preconstruction levels once construction is complete. However, once barge traffic into the harbor begins, turbidity and suspended solids levels would be expected to increase within the harbor.

Harbor construction would alter 20 acres of open water habitat by slightly increasing depth. This represents approximately 14% of the slack water area behind the dike field. The banks within the study area would be cleared of vegetation and protected with riprap. Impacts to fisheries resources associated with bank clearing and increased water depth should be minimal. However, harbor construction would more than likely reduce habitat suitability for fish species that normally utilize the area as well as change the species composition and abundance of aquatic insects used as food sources by fish.

The remaining dredge area within Old Slough Landing consist of 21 acres of non-forested wetlands, and 25 acres of vegetated wetlands. This represents approximately 13% of the seasonally flooded habitat of Old Slough Landing. This impact of 46 acres of

seasonally flooded habitat, in addition to the remaining 14 acres of forested wetlands and 14 acres of farmed wetlands, would be mitigated by replanting bottomland hardwoods on prior converted farmland within the batture area of the Mississippi River. The remaining 343 acres of black willow habitat in the Old Slough Landing is expected to remain intact after construction. Adverse impacts to floodplain species would be expected with the loss of 39 acres of forested wetlands. This community is vital to many bird, mammal, and reptile species for feeding, refuge, and reproduction. In addition, cropland dwelling species would also suffer adverse impacts due to the loss of cover during the growing season and limiting accessibility to waste grain and other foods.

Regarding endangered species, no least tern colonies have been found within the specific harbor footprint and construction should not impact colonies in the vicinity. The loss of spawning habitat from harbor construction is not anticipated to significantly alter forage fish populations. To avoid the possibility of disturbing any nesting least terns that occur within a few miles of the harbor site, no harbor construction (dredging or riprapping) would take place during the least tern nesting season. Therefore, constructing a harbor at Cates Landing is not expected to adversely impact nesting habitat, courtship behavior, or foraging strategy of the least tern.

Pallid sturgeon generally avoid shallow water and typically inhabit the deep thalwegs of large river channels that have a hard-packed sandy substrate. These habitats do not coincide with the proposed harbor location. No pallid sturgeon were collected during high water surveys in May or low water surveys conducted in September. However, pallid sturgeon could possibly use the Old Slough Landing for spawning and/or rearing habitat. In order to reduce the potential for adverse impacts, harbor construction (dredging or riprapping) would not take place during the pallid sturgeon spawning season.

The Corps has stated that harbor construction would likely begin in mid-August. The area of the Old Slough Landing is usually dry during this period and low water usually lasts until late November. Dredging the navigational channel is expected to take approximately 12-15 weeks. Therefore, it is highly unlikely that pallid sturgeon would be impacted during construction.

No eagle nests have been observed in the construction area and existing vegetation does not provide suitable nesting habitat. Additionally, construction of the harbor is scheduled to take place after the bald eagle nesting season. Therefore, no impacts to the bald eagle are expected.

## **CONCLUSIONS AND RECOMMENDATIONS**

In a letter dated April 12, 2004, the Service responded to the biological assessment (BA) prepared by the Corps for the three federally listed species that could potentially be impacted by the proposed project. We found the BA adequate and concurred with the finding of no adverse impact.

Earlier in the planning process, concerns of the Service and other resource agencies relative to fish and wildlife resources in the study area were presented to the Corps. The following actions were taken by the Corps to minimize impacts to fish and wildlife resources:

1. The harbor footprint was reduced, minimizing wetland impacts.
2. Drainage into the Reelfoot Lake drainage basin was 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 were not violated.
6. No work would be performed during the critical periods for federally listed threatened or endangered species.

In addition to the measures implemented by the Corps to reduce adverse impacts to fish and wildlife resources, the Service recommends that the following activities should be incorporated as project features in the final plan:

- 1) The cost of planning for and construction of the 134-acre wetland mitigation site should be considered an integral part of the cost for the proposed project. The site should be purchased and mitigation features applied before actual construction of the proposed project begins.
- 2) A thorough wetland mitigation plan with target conditions and performance standards to gauge compliance with the target conditions should be developed. The mitigation plan should be approved by the appropriate resource agencies before project construction begins.
- 3) A contingency plan should also be developed. The contingency plan should identify additional mitigation measures that would be undertaken if target conditions aren't met, as well as the party responsible for implementing these measures.
- 4) Financial assurances would need to be in place to ensure that funds were available to monitor the mitigation and undertake any corrective measures to restore the site in case target conditions are not met.
- 5) A legal means to ensure that the wetland mitigation site is protected in perpetuity should be established.

- 6) Additional dredge disposal sites should be purchased for the placement of maintenance dredge material in advance of harbor construction to avoid potential problems that could occur after the 5-year life span of the original disposal sites.
- 7) Fill needed for development of the industrial site should only be obtained from the mouth of the harbor. This would reduce potential adverse impacts to possible nesting least terns and fisheries resources in and along the Mississippi River.

This Draft Coordination Act Report is based on the project information that was available as of April 2004. The information presented in this report may be revised for the final Fish and Wildlife Coordination Act Report due to project alterations or receipt of additional data. If any part of the described plans change, the Service will re-evaluate the impacts and possibly modify our recommendations accordingly.