US Army Corps of Engineers®
Memphis District

SECTION I

Northwest Tennessee Regional Harbor

FINDING OF NO SIGNIFICANT IMPACT

AND

ENVIRONMENTAL ASSESSMENT

August 2004

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FINDING OF NO SIGNIFICANT IMPACT

NORTHWEST TENNESSEE REGIONAL HARBOR
Cates Landing, Lake County, Tennessee
Section 107 River and Harbor Act of 1960

Description of Action - The U.S. Army Corps of Engineers, Memphis District intends to construct a harbor for navigation purposes located at Mississippi River Mile 900, in the vicinity of Cates Landing, Lake County, Tennessee. Construction would include clearing vegetation, dredging a navigation channel (9,000 feet long, bottom width of 130 feet transitioning 225 feet for a berthing area, and a 300 feet diameter turning basin), placement of dredge material (1.02 million cubic yards) on land, and stabilizing the harbor banks with 30,600 tons of riprap and 15,300 tons of filter material. Unavoidable environmental impacts include the elimination of 60 acres of wetlands at an associated habitat value of 27 AHUV, 14 acres of farm wetlands, and 89 acres of prime and unique farmland. The loss of 27 AHUV and an additional 14 acres of farm wetlands would be mitigated by creating 134 acres of wetlands by planting bottomland hardwoods and creation of microtopography on prior converted farmland within the Mississippi River floodplain. The non-Federal cost sharing sponsor (Northwest Tennessee Regional Port Authority) would also construct an adjacent port facility and industrial area. Port facility and industrial area construction would impact 12 acres of wetlands, one acre of farm wetland, and 560 acres of prime and unique farmland. The loss of 12 acres of wetlands and one acre of farm wetland would be mitigated by creating 25 acres of wetlands by planting bottomland hardwoods and creating microtopography on prior converted farmland within the Mississippi River floodplain.

Factors Considered in Determination - An Environmental Assessment, 404(b)(1) Evaluation, and Biological Assessment were prepared to determine the potential impacts of the proposed work and various alternatives on vegetation; wildlife and aquatic resources; endangered and threatened species; cultural resources; floodplain management; wetlands; Section 404 of the Clean Water Act; hazardous, toxic, and radioactive waste; air and water quality; prime and unique farmlands; and cumulative impacts.

Coordination - A public notice and the Draft Environmental Assessment, describing the proposed action, was posted on the Internet, placed in local libraries, posted in local newspapers, and mailed to approximately 175 citizens, businesses, elected officials, and government agencies. Letters of support were received from 10 elected officials, six state government agencies, 31 private businesses, 11 non-governmental organizations, and 64 private citizens. Concerns were expressed by the Environmental Protection Agency, Natural Resources Conservation Service, and Fish and Wildlife Service. The concerns have been resolved. The Fish and Wildlife Service has concurred with the findings of the biological assessment and has submitted a Coordination Act Report. The Tennessee Historical Commission stated that the Memorandum of Agreement adequately addresses the potential affects and allows for phased identification and assessment for potential historic properties in areas of the project area not yet subjected to archaeological survey.

The Tennessee Department of Environment and Conservation, Division of Water Pollution Control issued Section 401 Water Quality Certification on 16 July 2004.

Issues Requiring Further Action – Prior to construction a detailed site specific mitigation plan would be coordinated with appropriate resource agencies. Water quality testing protocols would be developed and coordinated with appropriate agencies prior to construction and results furnished during construction. Cultural Resources surveys would be required and coordinated with appropriate parties as the local sponsor constructs site development.

Conclusion - After review of the documentation, I have determined this project (with the compensatory mitigation) is not a major Federal action significantly affecting the human environment. Therefore, I have determined that an environmental impact statement is not required.

_____ _____

Date

Charles O. Smithers III
Colonel, Corps of Engineers
District Engineer

ENVIRONMENTAL ASSESSMENT

NORTHWEST TENNESSEE REGIONAL HARBOR
Cates Landing, Lake County, Tennessee
Section 107 River and Harbor Act of 1960

1.0 PURPOSE OF AND NEED FOR ACTION

1.1 Study Purpose

The purpose of this study is to determine the engineering, economic, and environmental feasibility of constructing a public harbor 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 (Figure 1). 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 105 acres of land (Figure 2).

The Federal construction of the harbor would facilitate the Northwest Tennessee Regional Port Authority (NTRPA) to construct adjacent local service facilities and industrial development (Figure 3). The service terminal would be located directly on the harbor and would require fill to raise the area above the 100-year floodplain. Fill would be obtained from the Mississippi River. (Note: Geotechnical analysis determined that sediment excavated for harbor construction would not be suitable to build on. Therefore, fill would be obtained from suitable locations behind (landside) the Below Island No. 9 Dike Field.) Additional features include roadway improvements, railroad construction, utilities, wastewater, port facility with dolphins and winch system, mooring cells, administration buildings, parking areas, warehouses, storage tanks, and storage areas. This document will address the Federal action (harbor construction and disposal of dredge material) and site development (non-Federal portion).

1.2 Need for Action

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 constructing a harbor 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 $2,506,950 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

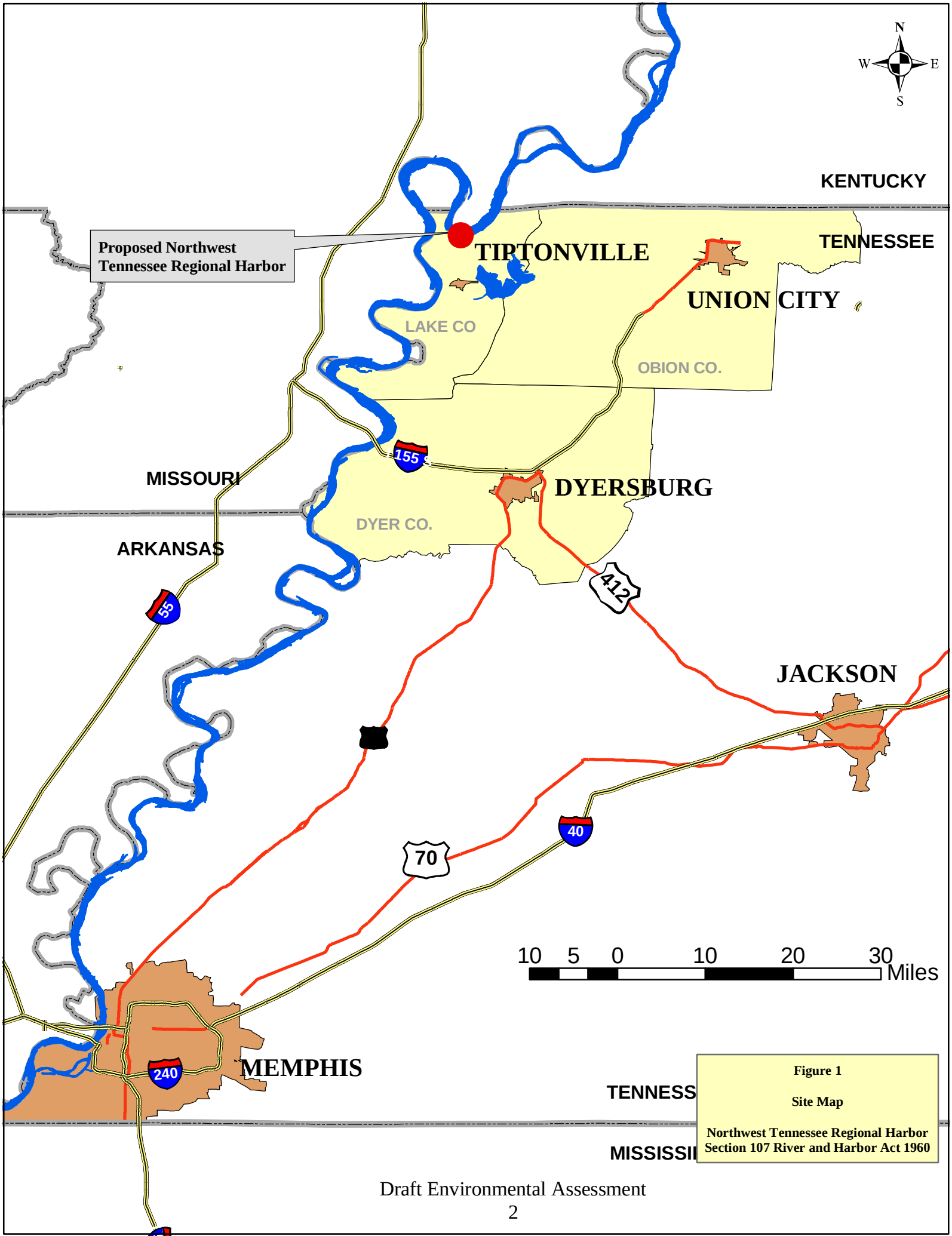

Figure 1

Site Map

Northwest Tennessee Regional Harbor
Section 107 River and Harbor Act 1960

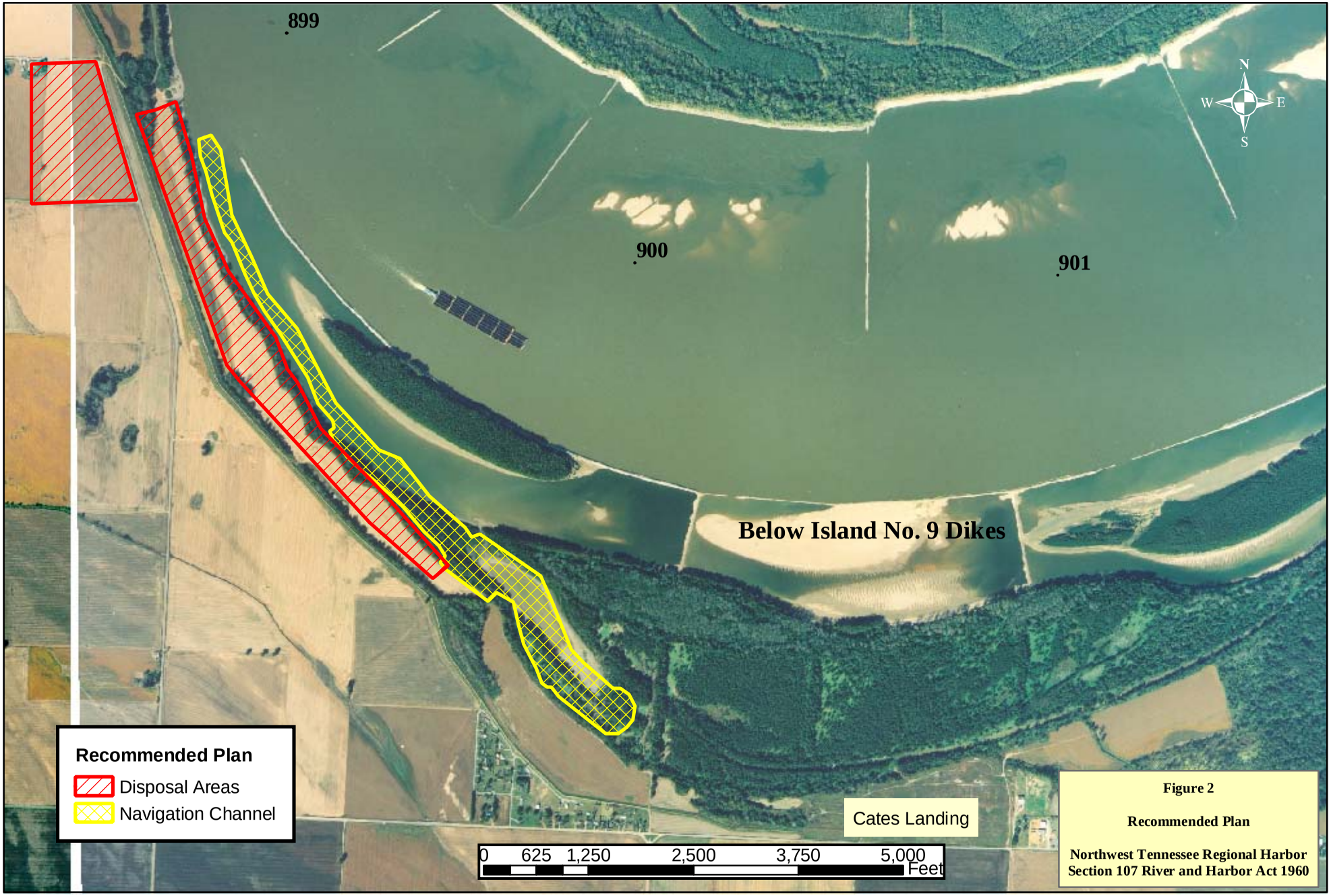

Figure 2

Recommended Plan

Northwest Tennessee Regional Harbor
Section 107 River and Harbor Act 1960

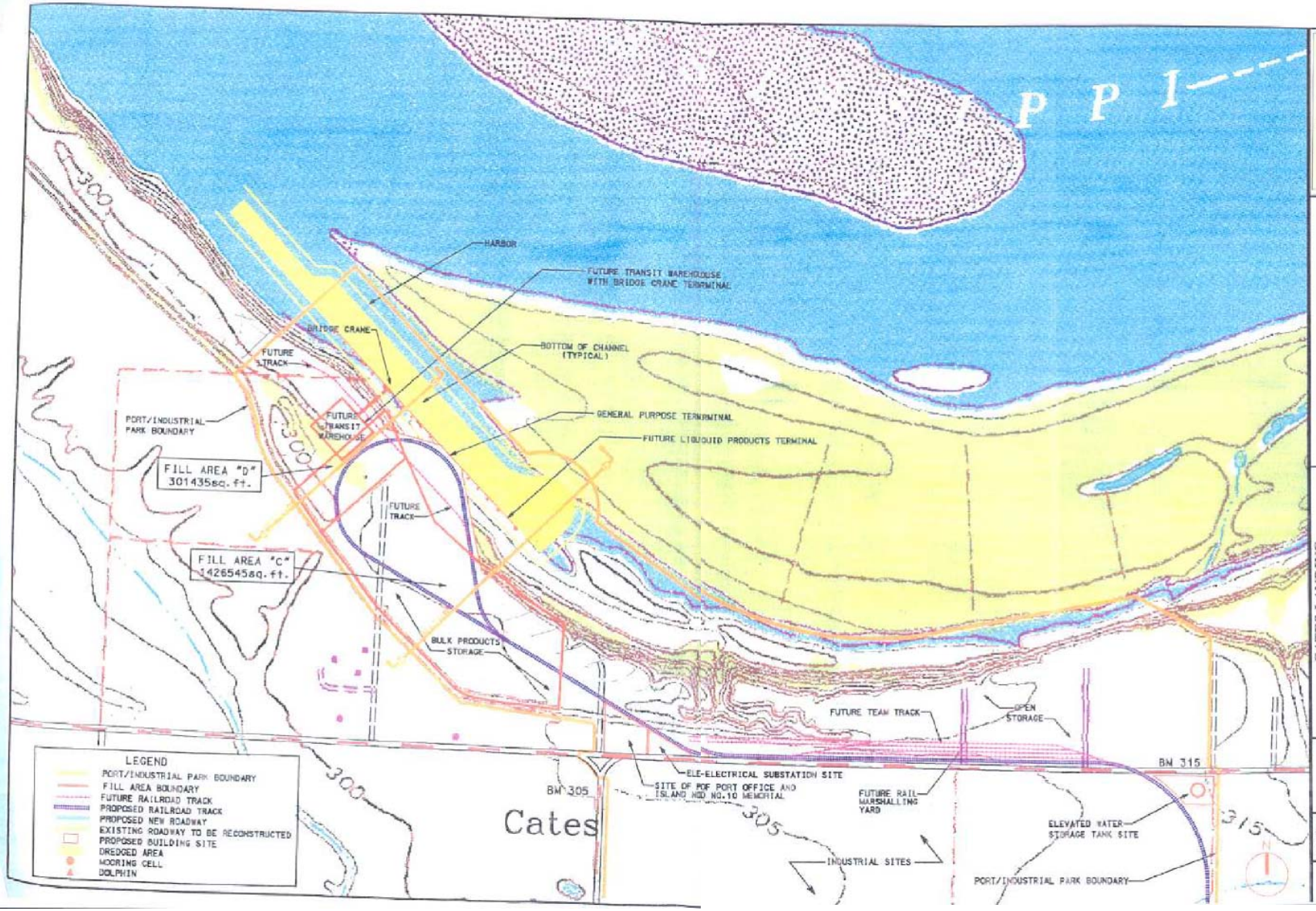

Figure 3
Site Development
Northwest Tennessee Regional Harbor
Section 107 River and Harbor Act 1960

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CATES LANDING
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REGIONAL PORT AUTHORITY

ALTERNATIVE FIVE SITE PLAN

SITE PLAN

SCALE: 1" = 600'

Job No.D20881100
Date: APR. 2002
Designed by: RTW
Drawn by: DLE

Sheet Number
3 OF 4

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.

1.3 Objectives

The Federal objective of water and related land resources project planning is to contribute to national economic development consistent with protecting the nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements (Water Resources Council, 1983). Contributions to the national economic development (NED) objective are achieved by increasing the net value (expressed in monetary units) of the nation's output of goods and services. Water and related land resource management plans must develop long-range goals and priorities for the study area that are consistent with the NED objective.

The primary objective of this project is to promote national economic development in an economically deprived area in northwest Tennessee by constructing a public harbor. The project planning objectives are:

1. Provide public access to the Mississippi River for navigation purposes.

2. Minimize adverse impacts to the fish and wildlife resources in the project area.

3. Mitigate unavoidable impacts to fish and wildlife resources to the maximum extent practical.

4. Minimize cost and maximize outputs.

1.4 Site Selection

Three potential areas were located in the northwest section of Tennessee that could support harbor facilities and an associated industrial area (Figure 4). The Tennessee Department of Economic and Community Development (TN ECD) and the local sponsor completed preliminary investigations of the three potential areas (TN ECD, 1998). 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 (TDEC) Division of Archaeology, Division of Natural Heritage, Division of Solid Waste, Division of Superfund, Division of Underground Storage Tanks, and Tennessee Historical Commission.

1.4.1 Site 1: Ridgely

The Ridgely site is located at approximate Mississippi River Mile 858. This site would utilize an existing slack water area located east of the Island 14 Chute. The proposed industrial site is protected from flooding by the Mississippi River Mainline levee. Fill would have to be placed along the harbor to raise the port facility area above the 100-year

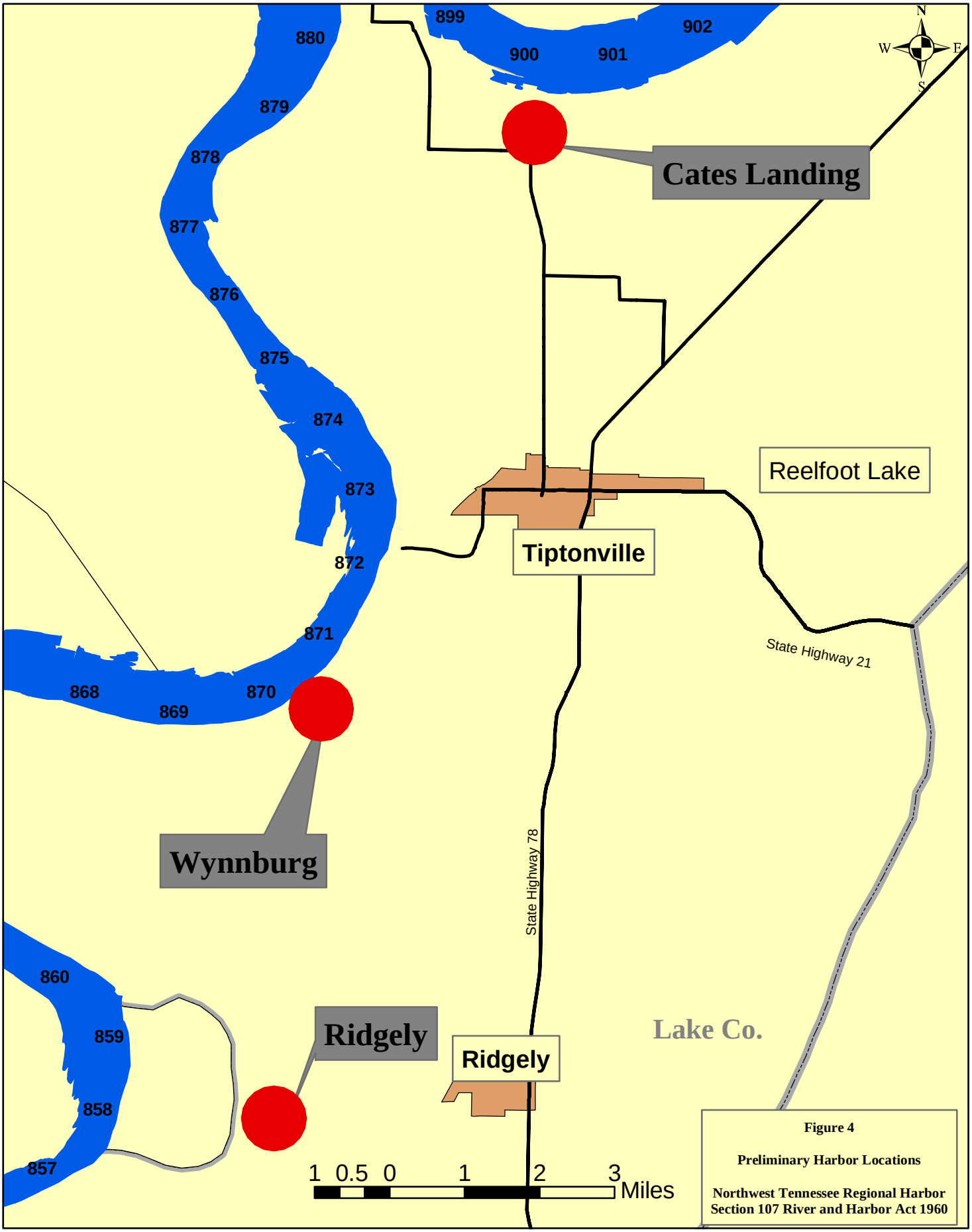

Figure 4

Preliminary Harbor Locations

Northwest Tennessee Regional Harbor
Section 107 River and Harbor Act 1960

flood. Wetlands would be lost from harbor dredging and fill associated with port development. TDEC stated that there are no present or past landfills, Resource Conservation Recovery Act (RCRA) facilities, promulgated state or Federal Superfund sites, and no problems with underground storage tanks in the area. The Division of Archaeology noted that one archaeological site appears to be significant in the industrial area.

1.4.2 Site 2: Wynnburg

The Wynnburg site is located at approximate Mississippi River Mile 870. Fill would have to be placed to raise the on/off loading area above the 100-year floodplain. The associated industrial area is protected from flooding by the Mississippi River Mainline Levee. Wetlands would be lost as a result of harbor dredging and fill associated with port development. TDEC stated that there are no present or past landfill sites, RCRA facilities, and promulgated state or Federal Superfund sites in the area. There has been some limited groundwater contamination from underground storage tanks from the Tennessee Department of Transportation (TDOT) garage located in Wynnburg. The Division of Archaeology stated that the area contains five archaeological sites that could be impacted as a result of harbor construction and industrial area development.

1.4.3 Site 3: Cates Landing

The Cates Landing site is located at Mississippi River Mile 900. 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 occurs above the 100-year floodplain, so levee protection is not required.

The project area was historically open for navigation. A U.S. Army Corps of Engineers concrete mat casting facility was located on the site. Concrete mats were loaded on to barges in this area and used for bank stabilization purposes in this region of the river. The facility was closed in 1983 because river stabilization in this area of the river was nearing completion and it was no longer economically feasible to keep the area open for navigation. The area has continued to silt in over time due to natural conditions and the construction of navigational features north of Cates Landing.

The Reelfoot/Lake County Chamber of Commerce and Lake County received a Department of Army Permit to construct a harbor at the site in 1991. This permit involved the dredging of 525,000 cubic yards along 1.5 miles of Slab Fill Chute to create a harbor 100 feet wide (bottom width) and nine feet deep. A 300-foot turning basin would also be dredged. Dredged material would 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. TDEC responded to the TN ECD study and stated that there were

no RCRA, state or Federal Superfund sites, or underground storage tanks located in the project vicinity. 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 site of Cronanville as well as likely prehistoric Indian sites.

The Industrial Development Board of Lake County reapplied for a Department of Army Permit in 1998 for construction of a harbor. Comments to the public notice indicated environmental concerns regarding the disposal of 1,100,000 cubic yards of sediment back into the river, lack of information concerning wetland loss and mitigation, and the close proximity to existing harbors (20 miles, Hickman, KY Port). No action was taken concerning the permit and the request was withdrawn.

1.4.4 Other Possible Sites

The project delivery team initially investigated Tennemo Landing (Mississippi River Mile 840.5) and Heloise/Mitchell Point (Mississippi River Mile 832.5). These areas were eliminated because there is not a Federal interest in construction of fast water ports.

1.4.5 Recommended Site

The Cates Landing site was chosen for the purpose of this study because the area was historically open for navigational purposes, had a prior Corps of Engineers permit and State of Tennessee Water Quality Certification for construction of a harbor, the unique elevation of the site, and the request of the local sponsor. The associated proposed industrial area naturally occurs above the 100-year flood.

1.5 Authority

This feasibility study and proposed 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 is responsible for 100% of the cost of site development and land, relocations, and right-of-ways for the entire project.

1.6 Decisions Needed

The decision to construct this project would be based on an evaluation of the probable impact, including cumulative impacts, of the activities on the public interest. That decision would reflect the national concern for both protection and utilization of important resources. The potential benefits of the activity must be balanced against its reasonably foreseeable detriments. All potential direct, indirect and cumulative effects of the activity will be considered, including: economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife, flood hazards, floodplain values, land use, navigation, recreation, water supply and conservation, water quality, energy needs, safety, considerations of property ownership and, in general, the needs and welfare of the people.

1.7 Scoping Process

A summary of the scoping process is found in the paragraphs below. A detailed description of the scoping process is found in Appendix IV, Section XI titled Scoping Process and Pertinent Correspondences.

1.7.1 Public Notice

A public notice was issued on 17 August 2000. The purpose of the notice was to inform project stakeholders of a proposal to construct a harbor in the area. The public notice had a proposed harbor design of 14,000 feet in length, 225-foot bottom width, and 9 feet in depth. Construction would involve excavating approximately 3.1 million cubic yards of sediment and disposing the material into the Mississippi River. Numerous letters of support were sent from local citizens, businesses, and elected officials. Concerns over harbor construction were received from resource agencies.

1.7.2 Interagency Meetings, Site Visits, and Teleconferences

Interagency meetings, site visits, and teleconferences were held to discuss the comments and any other relevant concerns over the proposed project. The relevant environmental concerns that were raised during the scoping process are as follows:

- Wetland Losses
- Impacts to Fish and Wildlife Resources
- Historic Town of Cronanville
- Proximity to Civil War Battle of Island No. 10
- Likely Prehistoric Sites
- “But For” Clause
- Mississippi River Disposal of Dredge Material
- Potential Contaminated Sediments
- Close Proximity to Reelfoot Lake
- Least Tern
- Pallid Sturgeon
- Bald Eagle
- Sicklefin Chub
- State Rare Plants
- Cumulative Impacts of Industrial Area
- Potential for Chip Mill Operation

- Loss of Nursery Habitat (Fish)
- Commercial Fishery Impacts

1.7.3 Draft Environmental Assessment

Federal, state, and local resource agencies; elected officials; Federally recognized Indian Tribes; non-governmental organizations; the general public; and any other interested parties were invited to review and comment on the draft environmental assessment. A public notice that stated the availability of the draft environmental assessment, described the proposed action, and requested water quality certification from the State of Tennessee was circulated to all applicable stakeholders and placed on the District's Internet homepage. The purpose of the public review period was to provide an opportunity to determine if the issues raised during the scoping process were adequately addressed in the impact analysis and to invite comments on any aspect of the process.

1.7.4 Final Environmental Assessment and Finding of No Significant Impact

This final assessment incorporated and responded to comments received from the public review of the draft environmental assessment. A Finding of No Significant Impact (FONSI) was prepared and signed by the District Engineer.

1.8 Federal and State Permits, Licenses, and Certifications Required to Implement the Action

1.8.1 Proposed Action

The proposed project would discharge dredge and fill material into waters of the United States. Therefore, the project would require the application of guidelines established in the Clean Water Act. The project would also require 401-certification and an Aquatic Resource Alteration Permit issued from TDEC, Division of Water Pollution Control.

1.8.2 Clean Water Act 404(b)

All civil works activities that involve the discharge of dredged or fill material into waters of the United States must involve the application of the guidelines promulgated by the Administrator, EPA, under authority of Section 404(b) of the Clean Water Act. The selection and use of disposal sites will be in accordance with guidelines developed by the Administrator of EPA in conjunction with the Secretary of the Army and published in 40 CFR Part 230. If these guidelines prohibit the selection or use of a disposal site, the Chief of Engineers shall consider the economic impact on navigation and anchorage of such a prohibition in reaching his decision. Furthermore, the Administrator can deny, prohibit, restrict or withdraw the use of any defined area as a disposal site whenever he determines, after notice and opportunity for public hearing and after consultation with the Secretary of the Army, that the discharge of such materials into such areas will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas, wildlife, or recreational areas. (See 40 CFR Part 230).

1.8.3 State Water Quality Certification

Section 401 of the Clean Water Act (33 U.S.C. 1341) requires any applicant for a Federal license or permit that would conduct an activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification from the state in which the discharge originates or would originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the affected waters at the point where the discharge originates or would originate, that the discharge will comply with the applicable effluent limitations and water quality standards. A certification obtained for the construction of any facility must also pertain to the subsequent operation of the facility. It is also the policy of the Corps of Engineers to obtain 401-water quality certification from all applicable states in which a civil works project is undertaken.

1.8.4 Aquatic Resource Alteration Permit

The Tennessee Water Quality Control Act of 1977, T.C.A. §69-3-108(b)(1), provides that it is unlawful for any person, except in accordance with the conditions of a valid permit, to carry out any activity which may result in the alteration of the physical, chemical, radiological, biological, or bacteriological properties of any waters of the State, including wetlands. These activities include, but are not limited to: the discharge of dredge or fill material, dredging, stream channel modifications, water withdrawals, wetlands alterations including drainage, and other construction activities which result in the alteration of the waters of the State. State permits for these activities are either §401 Water Quality Certifications or Aquatic Resource Alteration Permits (ARAP).

2.0 ALTERNATIVES CONSIDERED

This chapter describes the alternatives that were evaluated. Several alternatives were developed to meet the purpose and needs for the proposed harbor. Alternatives were developed and evaluated by an interdisciplinary planning team of engineers, economists, archaeologists, and biologists based on technical considerations, views of resource and regulatory agencies, and public concerns. Preliminary alternatives consisted of dredge material disposal areas and site development features. The location of the proposed port facility (non-Federal portion) would be dependent on the Federal recommended harbor design.

2.1 Preliminary Disposal Alternatives

Concerns were expressed over the placement of dredged material early in the planning stages of the project. Therefore, several preliminary alternatives were studied to determine the placement of dredged material during construction. Figure 5 provides locations of preliminary disposal alternatives.

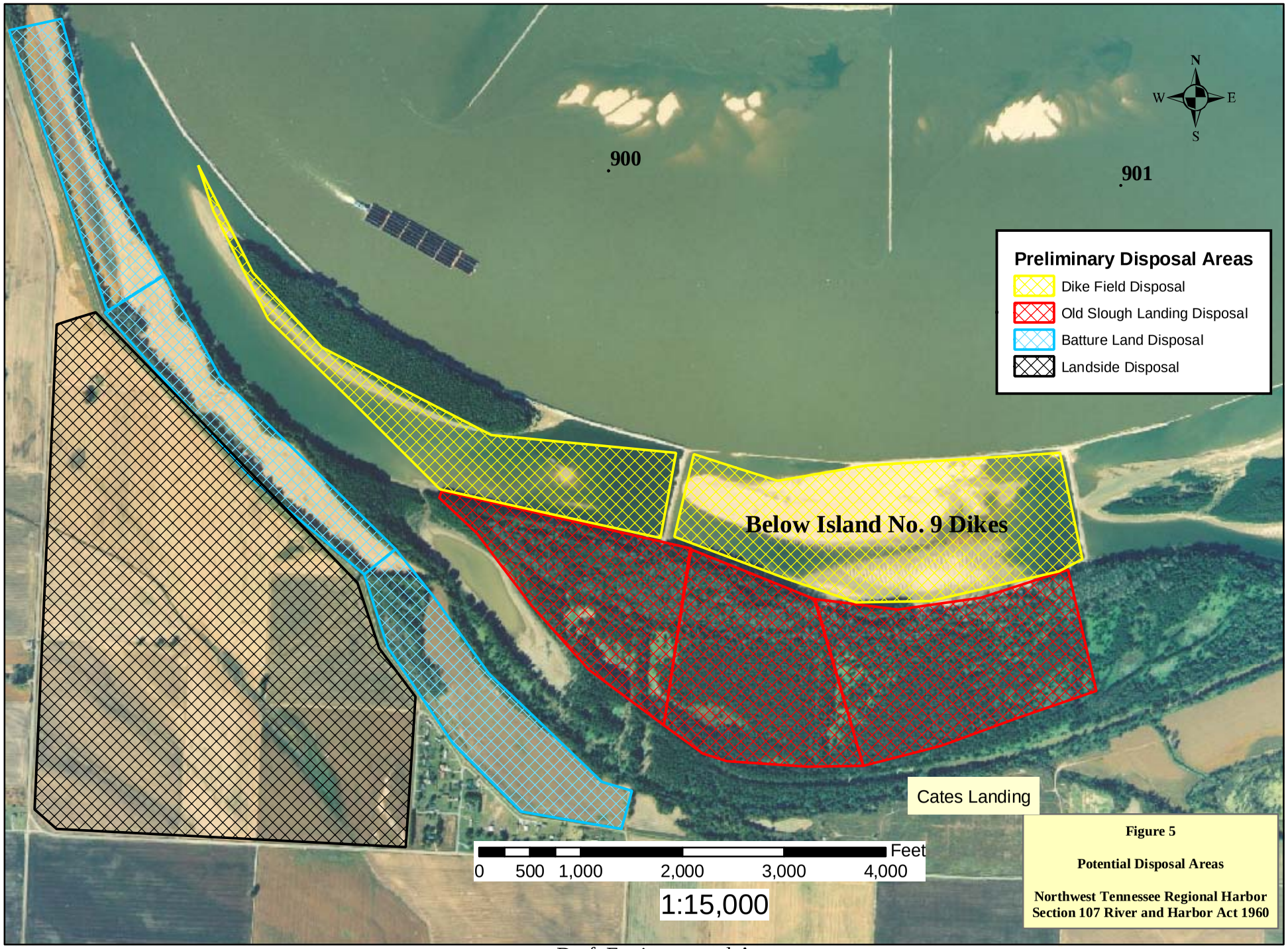

Figure 5

Potential Disposal Areas

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2.1.1 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, disposal of the dredged material into the Mississippi River was not considered in the development of alternatives. No further analysis was conducted on open water disposal.

2.1.2 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 considered in the development of alternatives. No further analysis was conducted.

2.1.3 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 dredge material. The placement of dredge 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 dredge material on Old Slough Landing was not considered in the development of alternatives. No further analysis was conducted.

2.1.4 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 development of alternatives.

2.1.5 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 dredge material landside of the levee was considered viable and was incorporated into the development of alternatives.

2.2 Site Development and Harbor Designs Studied in Detail

2.2.1 Site Development

The proposed industrial area is not dependent on the Federal recommended plan. The 500-acre site located south of Cates Landing would be utilized for industrial development. The port facility location would be dependent on the Federal recommended plan.

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 (Figure 6).

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.

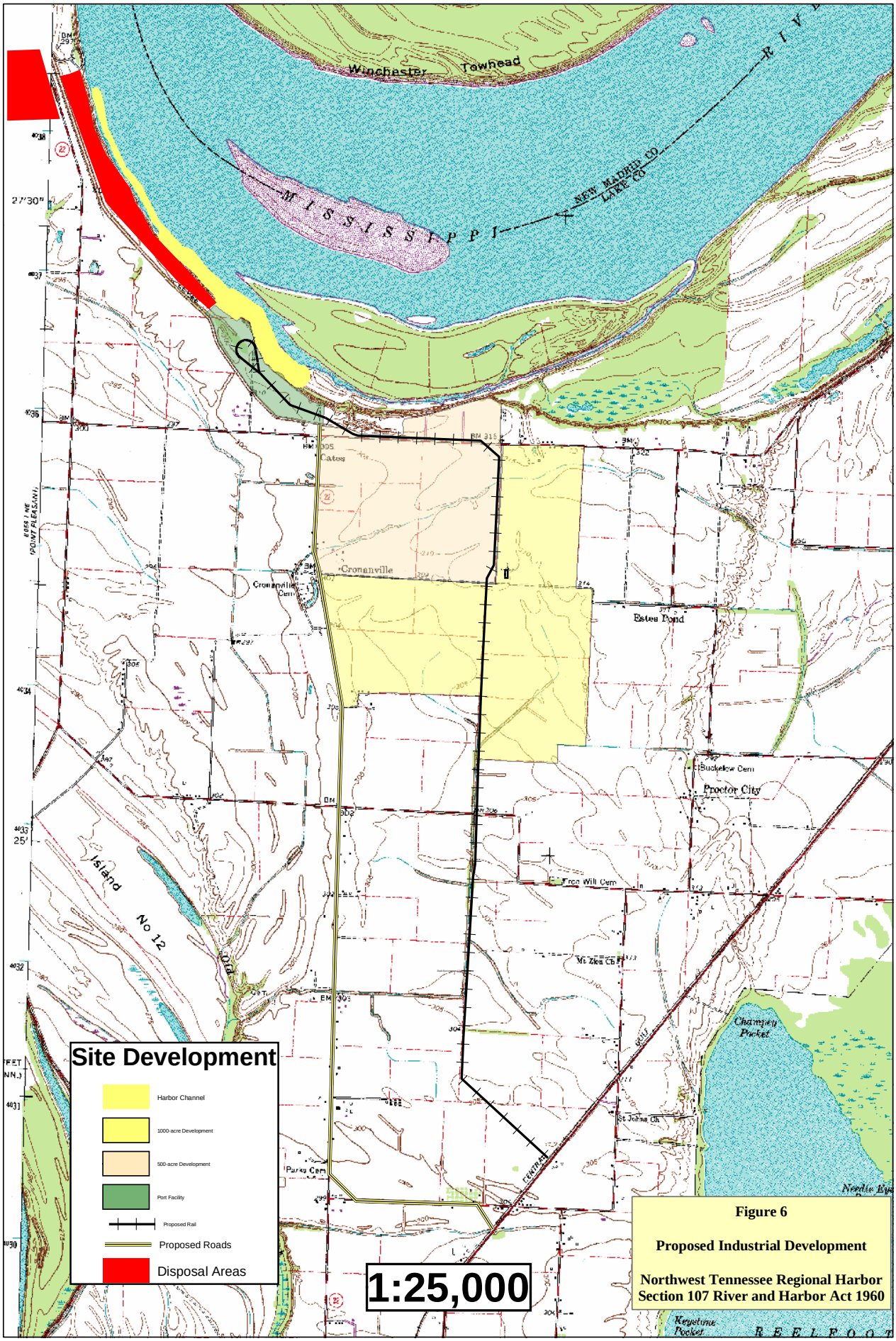

Figure 6

Proposed Industrial Development

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Port Facility

The location of the port facility would be dependent on the Federal recommended harbor plan. 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.

2.2.2 Harbor Design Alternatives Studied in Detail

Six alternatives, including the no action alternative, were formulated from the preliminary alternatives and were studied in detail. The selection of the recommended plan was based on being engineeringly feasible, economically justifiable, and environmentally acceptable.

Alternative 1: 225-Foot Bottom Width Harbor, 14,000 Feet Long

The proposed design would consist of dredging a channel approximately 14,000 feet long and 225 feet wide (bottom width) with a 300-foot turning basin. The harbor would cover an area of approximately 116 acres (Figure 7). Approximately 3,100,000 cubic yards of sediment would be excavated to create a nine-foot navigation channel (bottom elevation of 250.0 NGVD). Stone protection consisting of 79,000 tons of riprap and 39,000 tons of filter gravel would be used to stabilize the landside of the harbor from prop wash.

Dredge material would be placed seven feet high in the 315 acres landside of the levee, and the 110 acres located in the batture land. The batture land disposal site would also be utilized for future maintenance dredging operations over the project life.

Unavoidable environmental impacts from the Federal project would include the elimination of 151 acres of wetlands at an associated habitat value of 67 annualized habitat unit value (AHUV). An additional 16 acres of farmed wetlands would also be impacted. The loss of 67 AHUV and 16 acres of farmed wetlands would be mitigated by planting bottomland hardwoods on 352 acres of frequently flooded farmland.

The port facility would be located at the former casting field located at Cates Landing. Total area is approximately 66 acres. The area is currently above the 500-year Mississippi River floodplain. Therefore, no fill would be necessary to construct the terminal. No additional improvements (from what was stated above) to roads, railroads, or utilities would be required.

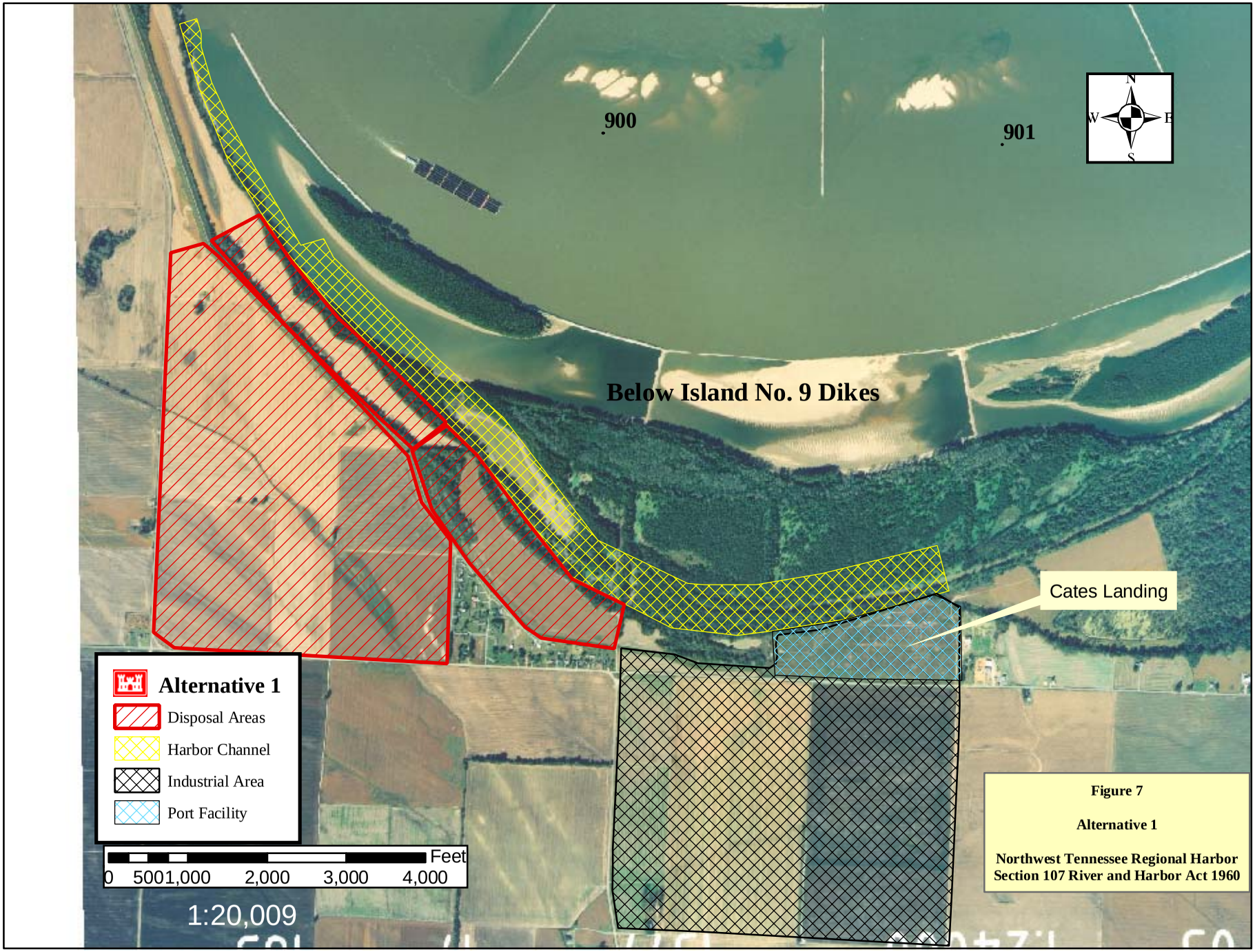

Figure 7

Alternative 1

Northwest Tennessee Regional Harbor
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Alternative 2: 130-Foot Bottom Width Harbor, 300-Foot Turning Basin, 14,000 Feet Long

The proposed design would consist of dredging a channel approximately 14,000 feet long, 130 feet wide (bottom width), with a 300-foot turning basin (Figure 8). This design would cover an area of approximately 95 acres and would require approximately 2,480,000 cubic yards of excavation. Stone protection consisting of 67,500 tons of riprap would be used to stabilize the landside of the harbor.

Dredged material would be placed seven feet high in the 166 acres landside of the levee, and the 110 acres located in the batture land. The batture land disposal site would also be utilized for future maintenance dredging operations over the project life.

Unavoidable environmental impacts from the Federal project would include the elimination of 127 acres of wetlands at an associated habitat value of 57 AHUV. An additional 6 acres of farmed wetlands would also be impacted. The loss of 57 AHUV and 6 acres of farmed wetlands would be mitigated by planting bottomland hardwoods on 289 acres of frequently flooded farmland.

The port facility would be located at the former casting field located at Cates Landing. The area is currently above the 500-year Mississippi River floodplain. Therefore, no fill would be necessary to construct the terminal. No additional improvements (from what was stated above) to roads, railroads, or utilities would be required.

Alternative 3: 225-Foot Bottom Width Harbor (entering upstream of Cates Landing)

The proposed design consists of dredging a channel 225 feet wide (bottom width) extending 8,500 feet upstream from Cates Landing (Figure 9). The design would cover an area of approximately 113 acres and would require approximately 4,100,000 cubic yards of excavation. Approximately, 142,000 tons of riprap would be used to stabilize the banks. No disposal sites were identified.

Unavoidable environmental impacts from the Federal project would include the elimination of 116 acres of wetlands at an associated habitat value of 52 AHUV. An additional 16 acres of farmed wetlands would also be impacted. The loss of 52 AHUV and 16 acres of farmed wetlands would be mitigated by planting bottomland hardwoods on 274 acres of frequently flooded farmland.

The port facility would be located at the former casting field located at Cates Landing. The area is currently above the 500-year Mississippi River floodplain. Therefore, no fill would be necessary to construct the terminal. No additional improvements (from what was stated above) to roads, railroads, or utilities would be required.

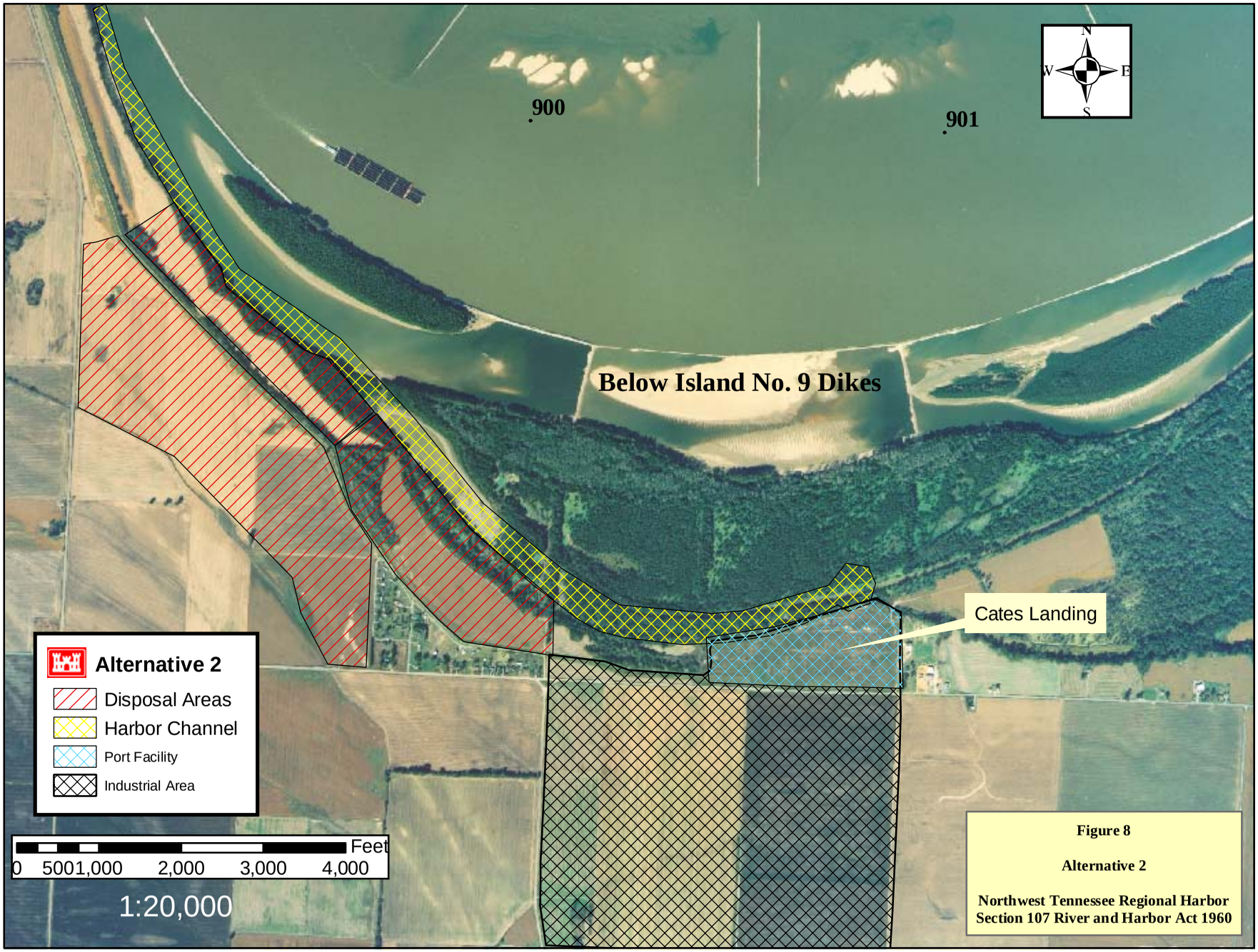

Figure 8

Alternative 2

Northwest Tennessee Regional Harbor
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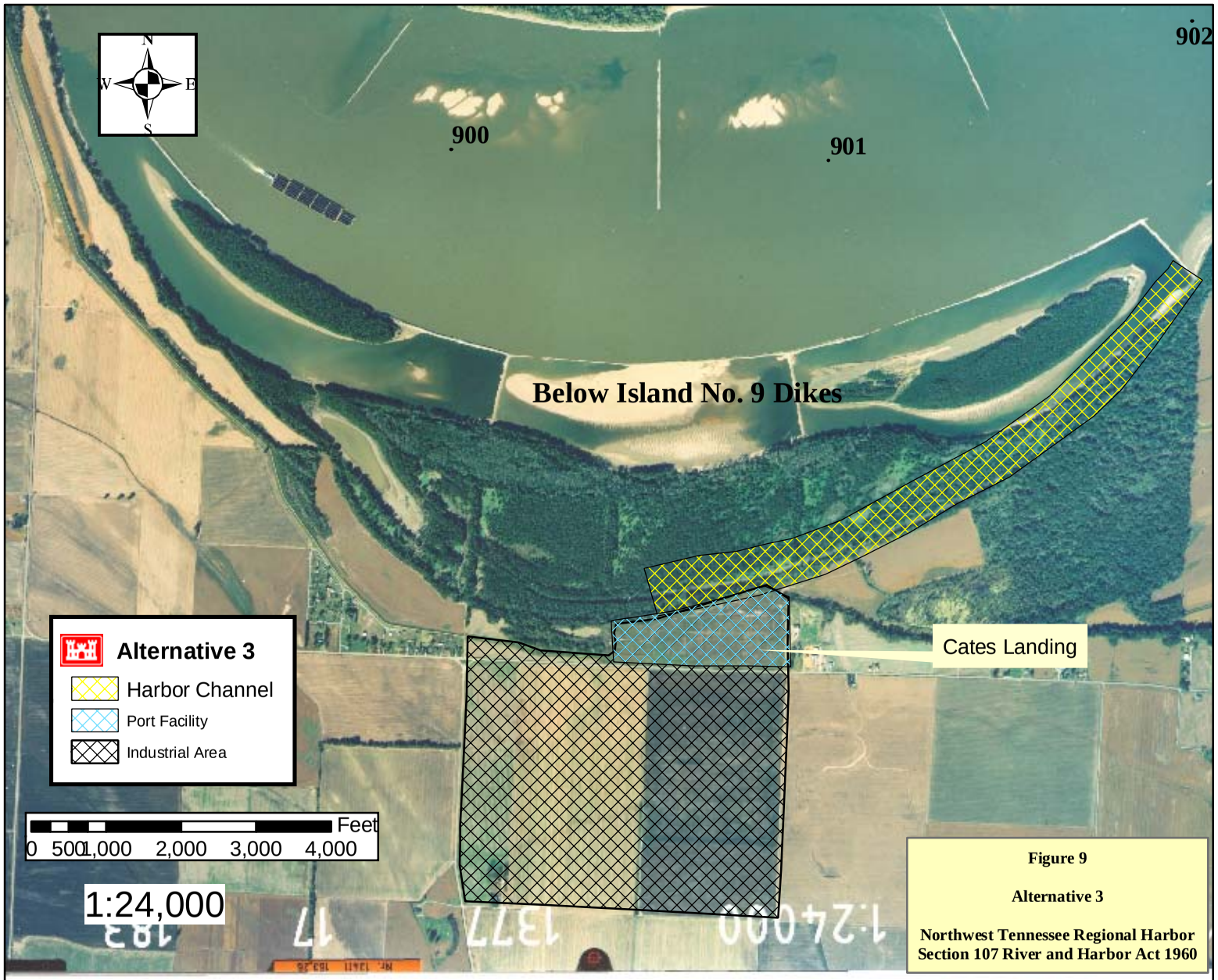

Figure 9

Alternative 3

Northwest Tennessee Regional Harbor
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Alternative 4: 225-Foot Bottom Width Harbor, 5000 Feet Long

Alternative 4 would consist of dredging a channel approximately 5,000 feet long, bottom width of 130 feet transitioning to 225 feet, and a 300-foot turning basin (Figure 10). The design would cover an area of approximately 33 acres and would require approximately 118,000 cubic yards of sediment removal. Approximately 5,600 tons of riprap and 2,800 tons of filter gravel would be used to stabilize the banks.

Dredge material would be placed in a 48-acre site located in the batture land. This area would also be utilized for maintenance dredging during the first five years of the project. Additional disposal areas would be purchased in suitable locations after five years.

Unavoidable environmental impacts from the Federal project would include the elimination of 20 acres of wetlands at an associated habitat value of 9 AHUV. An additional 2 acres of farmed wetlands would also be impacted. The loss of 9 AHUV and 2 acres of farmed wetlands would be mitigated by planting bottomland hardwoods on 47 acres of frequently flooded farmland.

The port facility would be located in a portion of the batture area. Fill, consisting of 165,960 cubic yards, would be required to raise the 44-acre port facility above 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 of interlocking steel pilings that would require 158,507 cubic yards of sand backfill (obtained from the river) and 16,310 cubic yards of open grade stone back fill. 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, the road improvements, rail spur, and utilities would have to be extended an additional 1.25 miles to the port facility from the industrial area.

Alternative 5: 130-Foot Bottom Width, 9000 Feet Long **(Recommended Plan)**

Alternative 5 would consist of dredging a channel approximately 9,000 feet long, bottom width of 130 feet transitioning to 225 feet for a berthing area, and a 300-foot turning basin (Figure 11). 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.

Dredge 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. The first area 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 farmed wetlands would also be impacted. The loss of 27 AHUV and

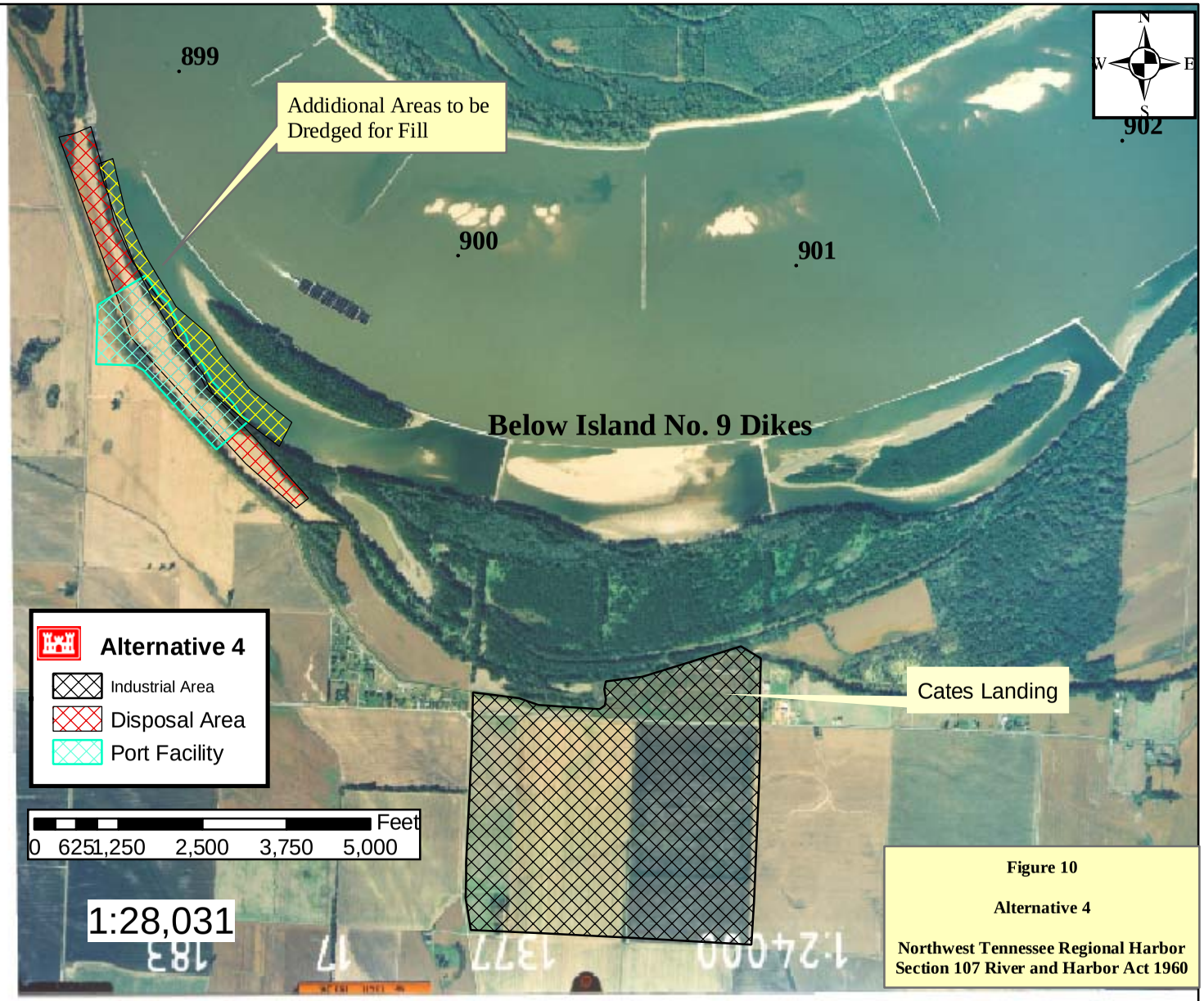

Figure 10

Alternative 4

Northwest Tennessee Regional Harbor
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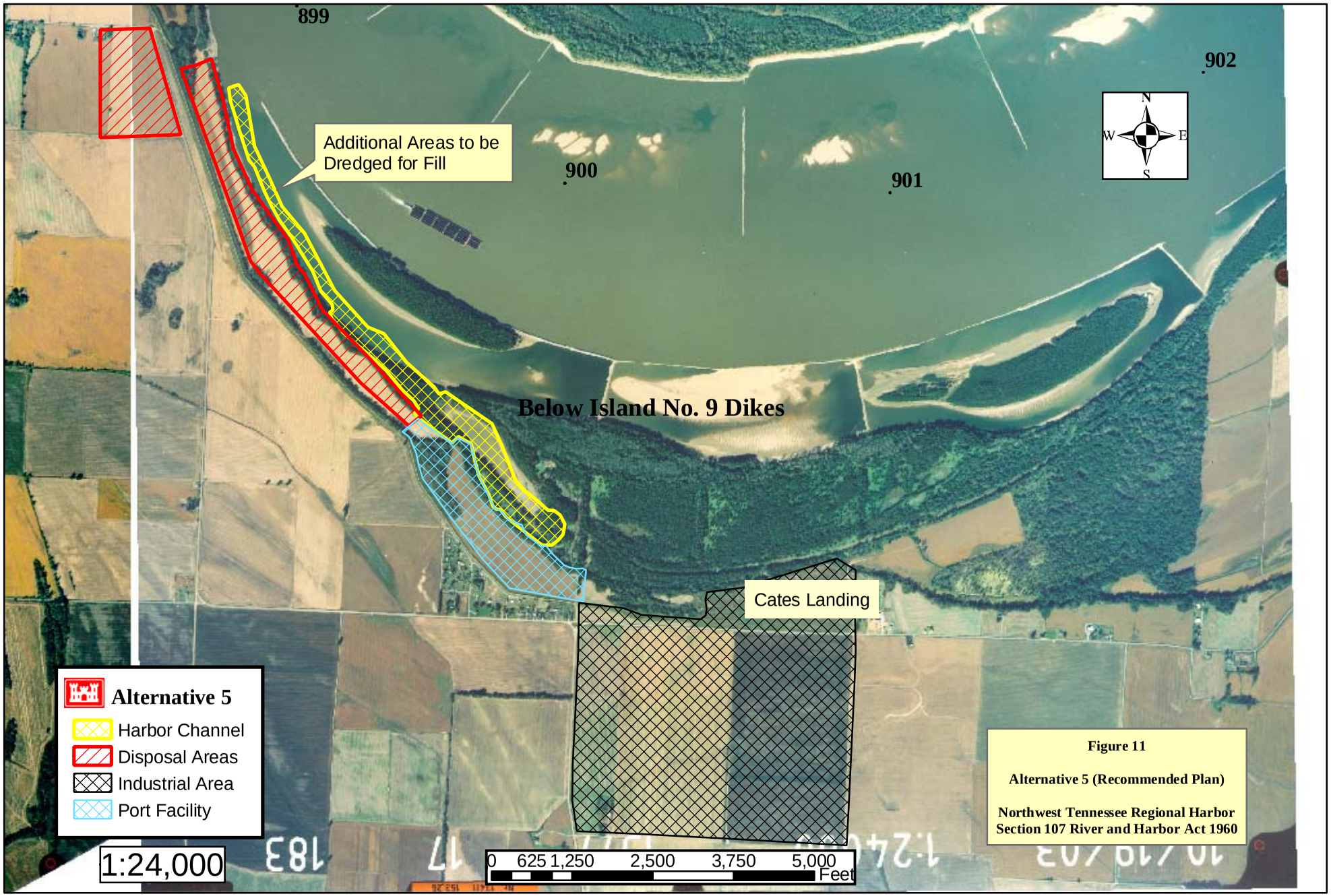

Figure 11

Alternative 5 (Recommended Plan)

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14 acres of farmed wetlands would be mitigated by planting bottomland hardwoods on 134 acres of frequently flooded farmland.

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 (obtained from the river) 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 farmed wetland. Wetland impacts would be mitigated by planting bottomland hardwoods on 25 acres of frequently flooded farmland.

Alternative 6: Without Project (No Federal Action)

There would be no economic benefits to the area under the no action alternative. The local sponsor could still pursue harbor development without a Federal interest. Proper permits would have to be obtained prior to construction. It is highly unlikely that industrial development of the 500-acre site would take place without the construction of a harbor to service the area.

2.3 Selection of the Recommended Plan

Economic analysis indicated annual benefits of $2,506,950 from a harbor located at Cates Landing. Alternatives 1 – 3 would have had the least expensive site development costs because of the high elevation of the land located at Cates Landing. However, Alternatives 1 – 3 would have had the highest environmental impacts and associated mitigation and construction costs. Alternative 4 was formulated to design a harbor that had minimal environmental impacts. The associated site development cost would total $19,331,800. Higher site development costs were a result of obtaining fill to raise the port facility above the 100-year floodplain and extending roads, rails, and utilities from the industrial area at Cates Landing to the new site. The benefit/cost ratio of Alternative 4 is 1.82. Alternative 5 was formulated as a compromise that reduces environmental impacts (from constructing a harbor to Cates Landing) and reduces site development costs (port facility is at a higher elevation then Alternative 4 and closer to the industrial area). Alternative 5 would still have higher site development costs than Alternatives 1 – 3 because of additional fill and the extension of rail, roads, and utilities to the new site. However, environmental impacts would be greatly reduced. Site development costs for Alternative 5 are $14,056,000. The benefit/cost ratio is 1.89. Alternative 5 was selected as the recommended plan because it offered the best compromise of environmental impacts and site development costs while still having a positive benefit to cost ratio. Alternative 5 is the NED plan.

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

The following paragraphs describe the existing conditions within the project area. Environmental impacts of each alternative are described in chapter 4.

3.2 Physical Factors

3.2.1 Location

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.

3.2.2 Geology

Lake County falls in the Mississippi Floodplain physiographic province. This area is characteristic of cutoffs, oxbow lakes, and natural levees formed by activities of the meandering river channel. The Mississippi River floodplain in Tennessee ranges in width from 15 miles near the project area to about five miles in the vicinity of Memphis. Elevation ranges from 185 to 230 feet above mean sea level. The Loess Hill Bluffs make up the eastern boundary of the province. This area is composed of silty Pleistocene loess up to 80 feet thick and underlain by fluvial deposits of sand, gravel, and Eocene clay and sandstone of the Jackson formation (Saucier, 1994).

The project falls in the New Madrid Seismic Zone that is situated in extreme northeastern Arkansas, southeastern Missouri, and northwestern Tennessee. The zone is located within an ancient, failed, intraplate rift in which faulting is present but is extremely complex and largely without surface expression. The zone is most well known from the series of seismic events that occurred in late 1811 and early 1812 around New Madrid, Missouri. These seismic events have been estimated to be among the strongest to occur on the North American continent in historic times (Smith and Pitts, 1982).

Unique landforms in the area consist of the Mississippi River and its alluvial floodplain; the Tiptonville Dome, an elliptical shaped rise extending from Proctor City, Tennessee, south to Tiptonville, Tennessee; Reelfoot Lake and its surrounding wetlands; and upland areas east of the bluffs.

3.2.3 Climate

A humid, temperate climate prevails in the study area with long, hot summers and cool winters. Monthly temperatures vary from an average minimum of 33 degrees Fahrenheit in January to a maximum of 91 degrees Fahrenheit in July. Precipitation averages about 45 to 50 inches per year with the heaviest rainfall usually occurring from January to April.

3.2.4 Soils

Brown et al., 1969 described the soils in the study area. Soils present at the harbor site are listed in Table 3-1. The Commerce-Adler-Robinsonville association is somewhat poorly drained to well-drained, loamy and silty soils on first bottoms of the Mississippi River. Crevasse Loamy Sand is an excessively drained soil and characteristic by a surface layer about 12 inches thick of grayish-brown loamy sand with a thick layer of pale-brown sand or loamy sand beneath it. The soil occurs regularly in areas between the Mississippi River and the levee and is the soil type in the proposed harbor area.

The Reelfoot-Tiptonville-Adler association is somewhat poorly drained and moderately well drained, silty and loamy soils on high bottoms of the Mississippi River. Adler Silt Loam, Frequently Flooded, is a deep, moderately well drained, fertile soil that occurs within the batture area in the western portion of Lake County. It is characteristic by an eight-inch surface layer of dark grayish-brown silt loam with brown to dark grayish-brown silt loam and loam beneath it. Adler Silt Loam, Frequently Flooded, is the dominant soil type in the proposed port facility area. Robinsonville Fine Sandy Loam, Frequently Flooded, is a well drained, fertile soil within the batture area. It is the dominant soil type in the batture disposal area. The surface layer is approximately eight inches of dark grayish-brown fine sandy loam with several feet of dark grayish-brown and brown loam, fine sandy loam, and silt loam beneath it. Bowdre Silty Clay is a somewhat poorly drained soil on the outer edges of the former Mississippi River channel. This soil is the dominant soil type in the land side disposal area. It is characteristic of a six-inch surface layer of very dark grayish-brown silty clay with 12 inches of very dark grayish-brown silty clay beneath it. The Iberia Silt Loam is a dark-colored, poorly drained, fertile soil with a 10-inch surface layer of very dark grayish-brown silt loam with several feet of gray and dark gray plastic clay beneath it. The Adler Silt Loam is a deep, moderately well drained, fertile soil. This soil is the dominant soil type in the proposed industrial area. The surface layer is eight inches of dark grayish-brown silt loam with brown to dark grayish-brown silt loam and loam beneath it.

The Iberia-Sharkey-Bowdre association is poorly drained and somewhat poorly drained, dark colored, silty and clayey soils on low, broad flats. Commerce Silt Loam is a fertile but somewhat poorly drained soil that is protected by levees. It is characteristic of a an eight-inch surface layer of dark grayish-brown silt loam with a dark grayish-brown, grayish-brown, and dark-gray silt loam and loam beneath it.

Table 3-2 Soil Associations and Soil Types, Northwest Tennessee Regional Harbor Feasibility Study		
Area	**Soil Association**	**Soil**
Harbor	Commerce-Adler-Robinsonville	Crevasse Loamy Sand
Disposal Areas	Reelefoot-Tiptoville-Adler	
Port Facility	Reelefoot-Tiptoville-Adler	Adler Silt Loam, Frequently Flooded
Batture Area		Robinsonville Fine Sandy Loam, Frequently Flooded
		Alder Silt Loam, Frequently Flooded
Land Side		Bowdre Silty Clay
Industrial Area	Reelefoot-Tiptoville-Adler	Bowdre Silty Clay
		Iberia Silt Loam
		Adler Silt Loam
	Iberia-Sharkey-Bowdre	Commerce Silt Loam

3.2.5 Visual Resources

The Mississippi River offers a wide range of conditions aesthetically attractive to people of varied tastes. The river is the most visually outstanding aspect of the project area. With the exception of Reelfoot Lake and areas directly along the river, the area is relatively flat with few tracts of trees. Agriculture is the primary land use in the area.

The project area contains many man-made features that either contribute to or detract from the aesthetic quality of the river. The Mississippi Mainline Levee parallels the river throughout Lake County except in the area of Cates Landing. The levee system provides visual access to the project area and adjoining lands where visibility is limited by the nearly level terrain. However, the levee system also blocks visibility of the river from surrounding lands.

Other man-made river features include revetment and dikes. Revetment has been constructed along the left bank in the project area. Revetment includes articulated concrete mats and riprap protection that were constructed to protect the banks from erosion. Dikes have been constructed throughout the project area to maintain the navigation channel.

3.2.6 Cultural Resources

Cultural resources include historic sites and districts, including archaeological sites; historic personal and related property; historic records; and community resources and lifeways.

A cultural resources literature and records search was conducted by Panamerican Consultants (Buchner, 2000). The project area included the proposed harbor footprint, proposed disposal areas, general service terminal, and the associated industrial development. The project area in which the survey was conducted is approximately 1,470 acres. The report is on file in the Memphis District and can be reviewed upon request. The project resulted in the following major findings:

1. There has been one previous archaeological study within a portion of the proposed harbor area. This was a reconnaissance survey conducted by the University of Memphis for TVA and resulted in the identification of one archaeological site that is potentially eligible for nomination to the National Register of Historic Places (NRHP). The archaeological site is an abandoned nineteenth-century town site and a cemetery known as Cronanville. The town was named for James B. Cronan, an Irish immigrant first documented within Lake County in 1866. It was apparently the only significant community besides Tiptonville in Lake County during the late nineteenth century. The town is presently an 86-acre surface scatter of nineteenth and twentieth-century historic artifacts around a fenced historic cemetery, modern church, and farm headquarters. The cemetery dates from 1838 and contains graves of early Lake County settlers such as Meriwether's, as well as Civil War military burials associated with the 1862 Battle for Island No. 10.

2. The Tennessee Historical Commission (THC) has recorded three historic properties within the study area. One of the properties is the Cronanville Cemetery. The THC maps suggest that they are a pair of historic structures. However, it is possible one of these may be a historic marker for the 1862 Battle for Island No. 10.

3. A Civil War earthwork associated with Confederate defenses of Island No. 10 has been documented 3km northeast of the study area. This site is eligible for the NRHP. Examinantion of Civil War period military maps suggest that Civil War military sites and/or features are possible within the study area. However, the Cates Casting Field has likely impacted many such features.

4. Two late nineteenth-century surface scatters associated with structures shown on a 1932 map have been previously recorded along the Markham Levee northeast of the project area. These sites were not considered eligible for NRHP listing. Based on review of the 1932 quad map, a number of similar sites are predicted to lie within the study area.

5. No prehistoric sites or components have been previously recorded within 5 km of the study area. This is somewhat surprising given the well-known concentration of prehistoric sites to the south near Tiptonville and in the Reelfoot Basin to the southeast. The project area is located on a 3,000 year old meander belt of the Mississippi River. Therefore, there is little chance to discover evidence of human occupation prior to 1,000 B.C. in the project area.

3.2.7 State and Federal Lands

With the exception of areas directly on the Mississippi River, the majority of land use in the area is agriculture. There are no state or Federal management areas or refuges in the project area. However, Reelfoot Lake is located within 3 miles of the proposed harbor. This area contains approximately 31,256 acres of publicly owned land and water. TDEC owns and manages the 279 acre Reelfoot State Park and the Tennessee Wildlife Resources Agency (TWRA) owns and manages the 18,700-acre Reelfoot Wildlife Management Area. The U.S. Fish and Wildlife Service (USFWS) manages the 10,427-acre Reelfoot National Wildlife Refuge (owns 2,580 acres, leases 7,847 acres from the State of Tennessee). The USFWS also owns and operates the 1,850-acre Lake Isom National Wildlife Refuge that is located approximately 8 miles from the proposed project. The Missouri Department of Conservation administers the 5,785-acre Donaldson Point Conservation Area. This area is located across the Mississippi River within 6 miles of the proposed project.

Reelfoot Lake and the surrounding wetlands are nationally significant for several reasons. Reelfoot Lake is the largest natural lake in the state of Tennessee and its unique history of formation by the earthquakes of 1811 and 1812 are well known. Reelfoot Lake is located within the Mississippi Flyway. This area provides valuable habitat for nationally significant migratory waterfowl species. Reelfoot Lake is also nationally significant because of the large number of bald eagles that winter in the area. Reelfoot Lake has been listed as a Threatened National Natural Landmark by the National Park Service, U.S. Department of Interior. The Tennessee Water Control Board designated the area of Reelfoot Lake and its associated wetlands as an Outstanding National Resource Water. This status assures that any projects that might adversely impact the lake would fall under intense scrutiny.

3.2.8 Water Resources

3.2.8.1 Wetlands

Wetlands are defined as, those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Wetlands were identified in the project area by utilizing existing Geographical Information System (GIS) data and conducting site visits. A summary of existing wetlands in the area can be found in the Habitat Impact Analysis (Appendix IV, Section IV). All of the vegetated areas within the study area, including Old Slough Landing and the silted in areas of Slab Fill Chute, were identified as wetlands. Additional areas of farmed wetlands were identified by the Lake County NRCS office.

3.2.8.2 Water Quality

The lower Mississippi River is turbid from suspended solids, moderately elevated levels of nutrients (phosphate, nitrate) from fertilizer, depressed levels of silicate (due to increased diatom populations from elevated nutrients) and seasonal extremes in flow. Water quality in the Mississippi River is within acceptable ranges most of the time.

The State of Tennessee classifies the Mississippi River at Cates Landing for all water criteria uses. The Tennessee Valley Authority (TVA) took water and sediment samples from the vicinity of the project area in 1993. Sediment tests from the Mississippi River locations revealed that concentrations of barium and manganese were in the "heavily polluted" range and arsenic and nickel were in the "moderately polluted" range. Sediment tests from Slab Fill Chute revealed that concentrations of copper, iron, manganese, zinc, barium, arsenic, chromium, and nickel were in the "moderately polluted range" or "heavily polluted" range.

Sediment testing was conducted for the purpose of this study (Appendix IV, Section IX). The study detected elevated levels of pollution in the sediments of Slab Fill Chute. However, the pollution was not at concentrations to warrant the material "hazardous".

3.2.8.3 Streamflow Regimes

The Mississippi River has the third largest drainage basin in the world, exceeded in size only by the watersheds of the Amazon and Congo Rivers. It drains 41 percent of the 48 contiguous states. The basin covers more than 1,245,000 square miles which includes all or parts of 31 states and two Canadian provinces.

The closest river gauge to the project area is located at New Madrid, Missouri (approximately 11 miles down river). Based on hydrograph data, the river fluctuates approximately 40 feet in this location. The river is usually at its lowest stage during the September/October timeframe. During late November or December, the river rises considerably. River stages usually fluctuate between high and low water periods during winter months. Highest water levels usually occur during spring months and gradually recede to low water levels during summer and extend into fall. Flooding occurs on Old Slough Landing when the New Madrid Gauge reaches 20.0 feet. Flood stage (out of bank) at this location occurs when the river gauge is at 34.0 feet.

3.2.8.4 Floodplains

Levees have altered the Mississippi River floodplain throughout the Lower Mississippi River Valley. Within the study area, the Mississippi River floodplain is confined to the batture area and Old Slough Landing. Cates Landing and the proposed industrial area to the south naturally occur above the Mississippi River 500-year floodplain. These areas are not protected by a levee system. Levees protect the remaining areas from flooding.

3.2.8.5 Ground Water

The alluvial aquifer of the Lower Mississippi Valley is a largely uninterrupted mass of coarse-grained substratum deposits that overlies the eroded suballuvial surface and extends from valley wall to valley wall. The aquifer is approximately 125 feet thick and has an estimated volume of 790 cubic miles. Freshwater stored in the aquifer has been estimated at more than 120 trillion gallons. The Wilcox Group (Fort Pillow Sand) and the Claiborne Group (Memphis Sand) are major tertiary aquifers in western Tennessee.

3.2.9 Recreation

With the exception of Reelfoot Lake, limited recreation exists in the project area. The limited recreation consists of hunting and fishing. Several duck blinds and deer stands have been observed on Old Slough Landing and Slab Fill Chute. A primitive boat ramp and access road exists at Jolly Landing (Mississippi River Mile 899).

3.2.10 Air Quality

Lake County is in attainment for all air quality standards.

3.2.11 Hazardous, Toxic, and Radioactive Waste (HTRW)

HTRW includes any material listed as "hazardous substances" under the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. 9601 et seq. (CERCLA); "hazardous wastes" under Sec. 3001 of the Resource Conservation and Recovery Act, 42 U.S.C. 6921 et seq.; "hazardous substances" identified under Section 311 of the Clean Air Act, 33 U.S.C. 1321; "toxic pollutants" designated under Section 307 of the Clean Water Act, 33 U.S.C 1317; "hazardous air pollutants" designated under Section 112 of the Clean Air Act, 42 U.S.C. 7412; and "imminently hazardous chemical substances or mixtures" on which EPA has taken action under Section 7 of the Toxic Substance Control Act, 15 U.S.C. 2606.

An HTRW survey was conducted as part of the feasibility study. The HTRW report can be found in Appendix IV, Section X. Illegal landfills were discovered in the vicinity of the project. The landfills contained household waste, household hazardous waste, used tires, and empty 55-gallon drums. No other HTRW was encountered.

3.2.12 Noise

The study area is relatively noise free due to its rural setting. Exceptions to this are noises associated with navigation, agricultural activities, and outdoor recreation (e.g., hunting, fishing). At times noise levels may be high as a result of these activities.

3.2.13 Land Use

With the exception of Reelfoot Lake, land use in Lake County is primarily agriculture. Major crops grown include corn, cotton, soybeans, and wheat. The Tenn-Ken railroad provides service to the area. Major roads include State Highway 78 (Tiptonville to Dyersburg) and State Highway 22 (Tiptonville to Union City).

3.3 Biological Factors

The study area was defined as the Mississippi River within the Below Island No. 9 dike field, Old Slough Landing, Slab Fill Chute, Cates Landing, potential disposal areas, site development areas, proposed rail and road rights-of-way, and the industrial area. The total study area encompasses 2,863 surface acres.

3.3.1 Vegetation

Existing vegetation was determined by utilizing existing GIS data developed in 1998 for the Mississippi River Mainline Levees Enlargement and Seepage Control Environmental Impact Statement (USACE, 1998), viewing recent aerial photography, and conducting site visits to the project area. Existing land use conditions are described in the Habitat Impact Analysis portion of the report (Appendix IV, Section IV).

3.3.1.1 Existing Vegetation

<u>Old Slough Landing</u>

Old Slough Landing is approximately 390 acres in size. Black willow (*Salix nigra*) at various ages is the dominant vegetation found throughout the area. Cottonwood (*Populus deltoides*) is found on higher elevated areas on the north section of the island immediately adjacent to the river. Black willow is 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. Silver maple, cocklebur (*Xanthium*), smartweed (*Polygonum*), golden rod (*Solidago*) are also found in the herbaceous layer. Mulberry (*Morus*) and poison ivy (*Rhus radicans*) is found on areas of higher elevation.

<u>Cates Landing</u>

The area of Cates Landing is approximately 66 acres and was once the site of a concrete mat casting field that has been abandoned. The area has been classified as "open land or scrub/shrub" on land cover data. Various species of grasses and sedges are the dominant vegetation. Tree species include black locust (*Robinia pseudoacacia*) and cedar (*Juniperus virginina*).

Batture Area

The batture area is approximately 170 acres in the study area. Farmland makes up the majority of the land cover in the area (approximately 115 acres). Crops grown in the area include cotton, soybeans, and wheat. Vegetation is confined to a thin riparian area along the river, a 12 acre tract of wetlands, and small strip of trees between the levee and the farmland. Trees observed include black willow, cottonwood, silver maple, hack/sugar berry (*Celtis* sp.), oak (*Quercus* sp.), and box elder (*Acer negundo*).

Landside of the Levee

The remaining area consists of approximately 1600 acres of farmland landside of the levee. Crops grown include soybeans, cotton, and wheat.

3.3.1.2 Threatened and Endangered Plants

There are no Federal threatened and endangered plants known to occur in the study area.

3.3.2 Wildlife

3.3.2.1 Habitat Value

The Habitat Evaluation System (HES) was used to quantify existing habitat conditions and make predictions of future habitat values in the bottomland hardwood habitat. The HES methodologies are described in the Habitat Impact Analysis (Appendix IV, Section IV). Habitat Quality Index (HQI) values were calculated from various locations in the study area. HQI scores range from 0 (low habitat value) to 100 (high habitat value). HQI scores ranged from a high of 50.72 in an area on Old Slough Landing to a low of 34.1 in a recently silted in area of Slab Fill Chute. The average weighted HQI score was 37.2 ± 5.1. Habitat value is considered low in the project area due to low forest diversity, little to none mast producing trees, limited understory and ground cover, and the lack of snags. The low habitat value of the site is most likely due to the extreme fluctuations of the river in this location (up to 40 feet).

3.3.2.2 Populations

Amphibians and Reptiles

The slack water area of the Mississippi and the frequently flooded areas of Old Slough Landing offers habitat for a variety of amphibians and reptiles. Amphibians observed during site visits include American toad (*Bufo americanus*) and leopard frog (*Rana* spp.). Reptiles observed include water snakes (*Nerodia* spp.) and red-eared slider (*Trachemys scripta elegans*). Numerous other species of amphibians and reptiles most likely use the backwater area, frequently flooded areas of Old Slough Landing, and the batture area.

Mammals

Mammalian habitat is limited due to the lack of forest diversity and the extreme fluctuations in river stages in the area. Signs of white-tailed deer (*Odocoileus virginianus*) and raccoon (*Procyon lotor*) were observed in the study area.

Birds

Numerous species of birds inhabit or migrate through the study area annually. Raptors observed include turkey vulture (*Cathartes aura*), bald eagle (*Haliaeetus leucocephalus*), northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), and American kestrel (*Falco sparverius*). Waterfowl observed include snow goose (*Chen caerulescens*), Canada goose (*Branta canadensis*), mallard (*Anas platyfhynchos*), northern pintail (*Anas acuta*), northern shoveler (*Anas clypeata*), wood duck (*Aix sponsa*), and canvasback/redhead (*Aythya* spp.). Shorebirds observed include the killdeer (*Charadrius vociferous*). Other birds observed include mourning dove (*Zenaida macroura*), interior least tern (*Sterna antillarum*), great blue heron (*Ardea herodias*) and gulls (*Larus* sp.).

3.3.2.3 Federally Threatened or Endangered Species

The FWS indicted two species of birds that are listed as threatened or endangered that may be located in the project vicinity. A detailed description of each species can be found in the biological assessment of this report (Appendix IV, Section III).

Bald Eagle

The bald eagle may be found along the Mississippi River near the project area in winter. Bald eagles are common migrants in the area and are rare breeders on the Mississippi and Missouri Rivers. Reelfoot Lake 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. Wintering eagles use larger diameter (>12-inch dbh) cottonwoods, sycamores, and other large riparian 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

The interior least tern has been a species of concern for many years because of its perceived low numbers and the vast transformation of riverine habitat. Barren sandbars, the species most common nesting habitat, were once a common feature of the Mississippi, Missouri, and other river systems in the central United States. Sandbars are still common at normal river stages on the lower Mississippi River and on portions of other river systems. On the Mississippi River, interior least terns occur almost entirely in the lower valley south of Cairo to Vicksburg. They spend 4-5 months at their breeding sites, arriving there from late April to early June. 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. Nesting has been documented on the sandbars across the river from the project and in upstream and downstream locations within five miles (USACE, 1999).

3.3.3 Fishery Resources

3.3.3.1 Populations

Fishes in the area are described in detail in the Fisheries Report (Appendix IV, Section VII). The lower Mississippi River provides habitat for numerous species of fish. Many of these species are backwater dependent during certain periods of their life cycle. The backwater area in the vicinity of Cates Landing, the seasonally flooded areas of Old Slough Landing, and the dike fields in the area provide habitat for an assemblage of lower Mississippi River fishes.

3.3.3.2 Federally Threatened and Endangered Species

<u>Pallid Sturgeon</u>

The pallid sturgeon (*Scaphirynchus alba*) historically was found in the middle and lower Mississippi River, the Missouri River, and the lower reaches of the Platte, Kansas, and Yellowstone Rivers. Pallid sturgeon require large, deep, turbid, free-flowing rivers with sand or rocky substrates. Pallid sturgeon have been captured in tributary mouths, over sandbars, along main channel borders, and in deep holes (USFWS, 1993).

3.3.4 Freshwater Mussels

Little information is known about freshwater mussels in the Mississippi River. A freshwater mussel survey was conducted by TWRA on 24 September 2003. The following species were observed:

- Rock Pocketbook (*Arcidens confragosus)*
- Yellow Sandshell (*Lampsilis teres*)
- Fragile Papershell (*Leptodea fragilis*)
- Pink Heelsplitter (*Potamilus alatus*)
- Mapleleaf (*Quadrula quadrula*)

Zebra mussels (*Dreissena polymorpha*) and Asian clams (*Corbicula fluminea*) were also observed during the sample.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This chapter describes the expected environmental impacts associated with the proposed action. The chapter is divided by relevant physical factors and biological factors. Impacts associated with the Federal portion of the project are listed first, followed by the impacts associated with site development. Cumulative impacts are found in paragraph 4.4. Where possible, quantitative impacts have been assessed.

4.2 Physical Factors

4.2.1 Visual Resources

4.2.1.1 Federal Project

Alternatives 1 – 5

The construction of a harbor located on the Mississippi River would impact various amounts of black water habitat on Old Slough Landing. Black willow habitat is very common throughout the region in areas that are frequently flooded by the Mississippi River. Harbor construction would impact 13% of the seasonally flooded black willow habitat on Old Slough Landing. Based on this percentage, no significant impact to the aesthetic value of black willow habitat is expected.

Dredge material would be placed up to seven feet high in disposal areas. The project area is relatively flat. Therefore, visual resources would be slightly impacted.

Alternative 6 – No Action

No impacts are anticipated to visual resources from the no action alternative.

4.2.1.2 Site Development

Site development would impact 500 acres of farmland for industrial development with the possible expansion to 1000 acres. With the exception of the state prison south of the project area, there are very few buildings. The development of the industrial area would permanently alter the landscape of the project area from a rural setting to an industrial setting.

4.2.2 Cultural Resources

4.2.2.1 Federal Project

Alternatives 1 – 5

A survey was conducted in the construction and disposal areas to determine if any cultural resources were present. A copy of the survey is on file at the Memphis District and has been coordinated with the SHPO. No cultural resources were found. No significant impacts to cultural resources are expected.

Alternative 6 - No Action

Cultural resources would not be impacted by construction under the no action alternative. However, farming practices within the project area may still impact cultural resources.

4.2.2.2 Site Development

A cultural resources survey was conducted in the area of the proposed port facility. No cultural resources were identified.

The Memphis District, SHPO, and the NTRPA have entered into a memorandum of agreement (MOA) to ensure that the project would not impact cultural resources in the proposed industrial area. The MOA states that a cultural resources survey would be conducted as areas become developed along the harbor and industrial area. These areas include rights of way required for road, rail, and utilities. The MOA also includes all future dredge disposal sites.

4.2.3 State and Federal Lands

Alternatives 1 - 6

No impacts are expected to state and Federal management areas or refuges in the project area. The industrial area including railroad spurs and road access has been moved out of the Reelfoot Lake watershed.

4.2.4 Water Resources

A 404(b)(1) evaluation has been conducted that analyzes the impact of placing dredge or fill material into waters of the United States. The Draft 404(b)(1) evaluation is included as Appendix IV, Section II). The Federal and non-Federal portions of the project would comply with the requirements of the guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem.

4.2.4.1 Federal Project

4.2.4.1.1 Wetlands

Alternatives 1 - 5

Table 4-1 lists the impacts to wetlands from project alternatives and mitigation required to offset the impacts. Impacts from each alternative are described in the Habitat Impact Analysis (Appendix IV, Section IV). The majority of wetland losses would result from dredging the harbor (converting wetland habitat to deep water habitat). Additional losses to wetlands and farmed wetlands would result from placing the dredge material on adjacent land.

Protection of wetlands was given a priority throughout the planning process. Alternatives 1 – 3 would have resulted in the greatest amounts of wetland loss. Alternative 4 was developed that would have reduced wetland loss to a minimum. However, site development costs associated with Alternative 4 would have been excessive. Therefore, Alternative 5 was developed that reduced the associated costs with site development and kept wetland losses to a minimum.

Pursuant to WRDA 1990, Section 307 (PL 101-640), project related impacts to wetlands would be mitigated to achieve no net loss of wetlands. Mitigation for each alternative is found in the Mitigation Report (Appendix IV, Section V). The HES was used to determine mitigation requirements for vegetated areas. Farmed wetlands were mitigated at a ratio of 1:1.

Alternative 6 - No Action

Areas of Slab Fill Chute would continue silting in under the no action alternative. Black willow is expected to colonize these areas rapidly, thus increasing the overall acreage of wetlands in the area. Wetland acreages within the batture area are expected to remain the same.

Table 4-1. Wetland impacts and mitigation, Northwest Tennessee Regional Harbor Feasibility Study.

Alternative	Wetlands (acres)	Farmed wetlands (acres)	Mitigation
1	151	16	352
2	127	6	289
3*	116	16	274
4	20	2	47
5†	60	14	134

* Disposal areas were not identified

† Recommended Plan

4.2.4.1.2 Water Quality

Alternatives 1-5

Temporary impacts to turbidity and total suspended solids are expected during construction. Dredge material would be placed in upland areas with water returning via an outlet pipe. The vast majority of dredge material would be contained in the disposal areas. Elevated levels of total suspended solids are expected in the return water.

The Mississippi River is turbid from the high sediment load it carries. Reported turbidity levels observed by TVA in 1993 in the area range from a low of 19.0 to 68.3 Nephelometric Turbidity Units (NTU). Recent observations conducted during the pallid sturgeon sampling reported turbidity levels at 43 NTU in the backwater area and 71 NTU in the main river channel. Turbidity levels and total suspended solids are highly variable in the study area and are dependent on river stages and velocities. Due to the existing high silt load and elevated turbidity levels found in the study area, no significant impacts are expected to total suspended solids and turbidity levels.

Sediment testing in the area revealed elevated levels of pollutants in the dredge material. The level of pollution is not at a concentration that would significantly impact water quality from the return water.

Best management practices that reduce the levels of total suspended solids would be incorporated into the final plans and specifications of the project. Prior to construction, water sampling protocols would be established between the District and TDEC to monitor the return water to ensure that state water quality standards are not violated during construction.

Alternative 6 – No Action

Water quality is expected to improve minimally over time due to existing environmental laws and regulations and the general public becoming more environmentally aware of water quality.

4.2.4.2 Site Development

4.2.4.2.1 Wetlands

There are no wetlands within the 500-acre industrial development area. However, there are approximately 50 acres of wetlands within the 1000-acre expansion area. Proper permits would have to be granted prior to development in these areas if the wetlands would be impacted.

The modification to existing roads and the construction of the rail spur would not impact any wetlands.

Alternatives 1 - 3

There would be no impacts to wetlands from constructing the port facility at Cates Landing.

Alternative 4

Constructing a port facility at Alternative 4 would impact six acres of wetlands and six acres of farmed wetlands.

Alternative 5

Constructing the port facility at alternative 5 would impact 12 acres of wetlands and one acre of farmed wetlands. Impacts to wetlands would be mitigated at a 2:1 ratio and impacts to farmed wetlands would be mitigated at a 1:1 ratio. Therefore, 25 acres of wetlands would be required from site development. Details on mitigation can be found in the Mitigation Section (Appendix IV, Section V),

4.2.4.2.2 Water Quality

A National Pollutant Discharge Elimination (NPDES) Stormwater Construction Permit would be required from the State of Tennessee prior to any construction activity that takes place for site development.

In addition to the NPDES Permit, road construction would include the extension of two existing drainage structures. The drainage structures would cross an unnamed tributary to Graveyard Slough. The tributary has been determined to be a wet weather conveyance by TDEC. No notification or permit is necessary from the State of Tennessee if general terms and conditions of the general permit are met.

In addition to the NPDES Permit, railroad construction would include five minor drainage structures. The proposed route crosses one unnamed tributary to Graveyard Slough that has been classified as a stream. A general permit for road crossing from the State of Tennessee would be required for construction.

Alternative 1 – 3

No significant impacts to water quality are expected from constructing the port facility at Cates Landing.

Alternative 4 - 5

The construction of the port facility at the Alternative 4 and 5 locations would require fill to raise the area above the Mississippi River 100-year floodplain. Fill would be obtained by additional dredging behind the Below Island No. 9 Dikes in the vicinity of the downstream portion of the harbor (high sand content). The same temporary impact from dredging are expected as stated above. Best Management Practices and water quality testing would be conducted during construction to ensure that state water quality standards are not violated.

4.2.5 Floodplains

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 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.

It is the policy of the Corps of Engineers to formulate projects which, to the extent possible, avoid or minimize adverse impacts associated with the use of the base floodplain and avoid inducing development in the base floodplain unless there is no practical alternative.

4.2.5.1 Federal Project

The harbor is water dependent. Therefore, there is no practical alternative from working within the floodplain. The placement of dredge material in the batture area would occur in the Mississippi River floodplain. Dredge material would be placed six-inches below the 100-year flood elevation. Due to the high clay content and the period of time required for the material to be suitable to build on, no development is likely to occur on the disposal area. The construction of a harbor and placement of dredge material in the floodplain would not significantly impact flood stages on the Mississippi River. Impacts to fish and wildlife resources and wetlands would require mitigation. Mitigation would restore and preserve the natural beneficial values of the base floodplain by planting bottomland hardwoods on frequently flooded farmland within the Mississippi River floodplain. No significant impacts are expected.

4.2.5.2 Site Development

Fill would be required to raise the port facility above the Mississippi River 100-year floodplain. The harbor and port facility is water dependent. Therefore, there are no practical alternatives from developing the base floodplain. The filling of 44 acres would not significantly impact flood stages. The industrial area is located above the 100-year flood elevation. No significant impacts are expected.

4.2.6 Recreation

The Mississippi River in this location and Old Slough Landing is utilized for hunting and fishing. Ample opportunities for hunting and fishing exist in the study area. The construction of a harbor would disturb some recreation, but would not have a significant impact in the area.

4.2.7 Air Quality

4.2.7.1 Federal Project

Alternatives 1 - 5

The area is in attainment for all air quality standards. No impacts are anticipated to attainment levels. Since the equipment to be used is a mobile source, the project is exempt from air quality permitting requirements. Although air emissions would not require a permit, best management practices shall be used throughout the construction to minimize air pollution.

Alternative 6 – No Action

Air quality would not be impacted under the no action alternative.

4.2.7.2 Site Development

A state operating permit would be required from the Tennessee Division of Air Pollution Control (APC) for any industry that is planning on operating an air contaminant source. Facilities that emit more than 100 tons/year of an air pollutant, 10 tons/year for a hazardous air pollutant, and/or 25 tons/year of a combination of hazardous air pollutants must obtain a Title V Operating Permit. APC reviews each permit application to determine compliance with all applicable air pollution control regulations. APC has the right to conduct inspections at each facility as deemed necessary to ensure that any existing, new, modified, replaced, or relocated source of air pollution complies with all air pollution emissions standards and will not nave a detrimental impact on human health or the environment.

4.2.8 HTRW

Alternatives 1 - 5

An HTRW survey (Appendix IV, Section X) has been conducted. Division of Superfund records indicate that no inactive hazardous substance site is known within 4 miles of the project area located at the Cates community on the Mississippi River at mile 900.

Illegal landfills were identified in the area during site visits. These areas were located in the abandoned casting field site and in an area directly upstream of the recommended plan. The illegal landfills contained household waste, household hazardous waste, used

tires, and empty 55-gallon drums of an unknown substance. The illegal landfill was on fire during one site visit. Alternatives 1 – 3 would impact these areas. These areas would have to be cleaned up or avoided before construction. Alternatives 4 and 5 would avoid the illegal landfills.

Alternative 6 – No Action

Illegal dumping is expected to continue under the no action alternative.

4.2.9 Noise

4.2.9.1 Federal Project

Alternatives 1 - 5

Noise is expected to increase during initial construction due to operation of construction equipment. No significant impacts to noise levels are expected.

Alternatives 6 – No Action

Noise levels would remain the same under the no action alternative.

4.2.9.2 Site Development

Noise is expected to increase once the harbor and port facility become operational due to an increase in barge traffic, on/off loading equipment, increases in rail and truck traffic, and industry.

4.2.10 Land Use

4.2.10.1 Federal Project

Alternatives 1 - 5

Total land use impacts by alternative are given in Table 4-2. Agriculture areas and black willow habitat would have the greatest impacted acres. Impacts to black willow are generally due to harbor dredging. Impacts to agricultural areas are due to the placement of dredge material on land.

Table 4-2 Total acres of land use impacts, Northwest Tennessee Regional Harbor Feasibility Study					
Land Use	**Alt. 1**	**Alt. 2**	**Alt. 3***	**Alt. 4**	**Alt. 5**
Black Willow	112	93	73	20	36
Cottonwood/Black Willow	2	2	4	0	3
Agriculture	380	233	2	37	90
Open Water	23	17	9	20	20
Non-Forested Wetland	29	24	0	0	21
Mixed Forest	8	8	20	0	0
* Disposal sites were not identified					

The recommended plan would also impact an additional 134 acres of agricultural areas for mitigation from the unavoidable impacts to fish and wildlife resources from the project. Mitigation calls for planting bottomland hardwoods on frequently flooded farmland.

Alternative 6 – No Action

Land use is expected to remain the same under the no action alternative.

4.2.10.2 Site Development

Total impacts to land use from site development are given in Table 4-3. The vast majority of impacts are in agricultural areas. Utility rights of way would follow existing utility corridors.

Table 4-3 Land use impacts from site development, Northwest Tennessee Harbor Feasibility Study				
Site Development	**Farmland (acres)**	**Wetlands (acres)**	**Farmed wetlands (acres)**	**Mixed Forest (acres)**
Port Facility	32	12	1	12
Industrial Development	500	0	0	0
Industrial Development (expansion)	500	50	0	0
Roads	32	0	0	0
Railroad	32	0	0	0

The construction of the port facility at the Alternative 5 location would impact an additional 25 acres of frequently flooded farmland for mitigation.

4.2.11 Prime and Unique Farmlands

Alternative 5

The NRCS was contacted concerning the disposal areas and proposed industrial site from the recommended plan. Table 4-4 provides information concerning prime and unique farmlands within the project area. A Farmland Conversion Impact Rating has been completed on the recommended plan and is included as Figure 12. The recommended plan and site development would impact 649 acres of prime farmland.

Table 4-4
Farmland impacts from the Recommend Plan, Northwest Tennessee Regional Harbor Feasibility Study.

Area	**Impacted Farmland (Acres)**	**Prime and Unique Farmland (acres)**	**Relative Value (0 – 100)**	**Site Assessment (0 – 160)**	**Total Points (0 – 260)**
Disposal Areas	105	57	92	70	162
Port Facility	32	32	88	68	156
Industrial Area	500	500	94	79	173
Road and Railroad	64	60	87	73	160

4.3 Biological Factors

4.3.1 Vegetation

4.3.1.1 Federal Project

Alternatives 1 - 5

Direct impacts to vegetation would result from clearing activities necessary to dredge the harbor and construction of containment areas to contain the dredge material. Impacts to vegetated areas are given in Table 4-4.

Table 4-5
Impacts to vegetation (acres), Northwest Tennessee Regional Harbor Feasibility Study

Land Use	Alt. 1	Alt. 2	Alt. 3*	Alt. 4	Alt. 5
Black Willow	112	93	73	20	36
Cottonwood/Black Willow	2	2	4	0	3
Mixed Forest	8	8	20	0	0
Non-Forested Wetland	29	24	0	0	21
* Disposal sites were not identified.					

Figure 12. Farmland Conversion Impact Rating

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 7/7/04
Name Of Project Northwest Tennessee Regional Harbor	Federal Agency Involved U.S. Army Corps of Engineers
Proposed Land Use Placment of dredge material and industrial deve	County And State Lake County, Tennessee
PART II *(To be completed by NRCS)*	Date Request Received By NRCS 7/9/04

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).* Yes ☑ No ☐ | Acres Irrigated NA | Average Farm Size 1,120 Ac

Major Crop(s) Corn	Farmable Land In Govt. Jurisdiction Acres: 86,425 % 70	Amount Of Farmland As Defined in FPPA Acres: 80,400 % 93
Name Of Land Evaluation System Used Lake County	Name Of Local Site Assessment System NA	Date Land Evaluation Returned By NRCS 7/13/04

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	105.0	32.0	500.0	64.0
B. Total Acres To Be Converted Indirectly	0.0	0.0		
C. Total Acres In Site	105.0	32.0	500.0	64.0
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	57.0	32.0	500.0	60.0
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.0	0.0	0.0	0.0
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	37.0	68.0	37.0	68.0
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	92	88	94	87

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use		15	15	15	13
2. Perimeter In Nonurban Use		10	9	10	9
3. Percent Of Site Being Farmed		20	20	20	20
4. Protection Provided By State And Local Government		0	0	0	0
5. Distance From Urban Builtup Area		15	15	15	15
6. Distance To Urban Support Services		5	0	5	0
7. Size Of Present Farm Unit Compared To Average		0	0	0	0
8. Creation Of Nonfarmable Farmland		0	2	5	7
9. Availability Of Farm Support Services		5	5	5	5
10. On-Farm Investments		0	0	2	2
11. Effects Of Conversion On Farm Support Services		0	0	0	0
12. Compatibility With Existing Agricultural Use		0	2	2	2
TOTAL SITE ASSESSMENT POINTS	160	70	68	79	73
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	92	88	94	87
Total Site Assessment *(From Part VI above or a local site assessment)*	160	70	68	79	73
TOTAL POINTS *(Total of above 2 lines)*	260	162	156	173	160

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

(See Instructions on reverse side) Form AD-1006 (10-8

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Alternative 6 - No Action

Areas of Slab Fill Chute would continue silting in under the no action alternative. Black willow is expected to colonize these areas rapidly. Cottonwood habitat is expected to replace black willow habitat over time because of natural plant succession and the changes in elevation due to siltation on Old Slough Landing. No changes to vegetation are expected in the batture area and areas landside of the levee.

4.3.1.2 Site Development

The recommended proposed port facility would impact 12 acres of mixed forest habitat. Tree species found in the area include black willow, cottonwood, sugar/hack berry, and box elder.

4.3.2 Wildlife Resources

4.3.2.1 Federal Project

Alternatives 1 - 5

Table 4-5 provides a summary of unavoidable impacts to wildlife resources and acres of mitigation required to offset the impact over the life of the project. Impacts to wildlife resources were quantified by using the HES. The HES methodologies and assumptions are described in the Habitat Impact Analysis (Appendix IV, Section IV). Impacts to wildlife resources are expressed as AHUV. Alternative 1 would have resulted in the highest losses of AHUV (67 AHUV) while Alternative 4 had the lowest (9 AHUV) of all construction alternatives. The recommended plan would impact 27 AHUV.

Methodologies used to mitigate impacts from various alternatives are discussed in the Mitigation section (Appendix IV, Section V). Approximately 9,000 acres of potential mitigation areas were identified based on the following criteria:

1. Located within the Mississippi River Batture Areas or Floodplain
2. Farmland
3. Frequently flooded
4. Located adjacent to existing National Wildlife Refuges or Wildlife Management Areas
5. Located adjacent to existing bottomland hardwoods
6. Management potential

Several mitigation alternatives were evaluated to determine the acreages of mitigation required to offset the impact of 27 AHUV. The alternatives evaluated were as follows:

a) Purchase land and allow for natural succession
b) Purchase land and plant with black willow (similar habitat that is being impacted)

c) Purchase land and plant with high habitat valued bottomland hardwood seedlings (mast bearing trees)
d) Purchase land and plant with a mixture of high and low habitat valued bottomland hardwood seedlings
e) Purchase land, create topography, and plant with a mixture of high/low habitat valued bottomland hardwood seedlings.

Table 4-6
Unavoidable impacts to wildlife resources and acres of mitigation required to compensate the loss, Northwest Tennessee Regional Harbor Feasibility Study.

Alternative	Impacts (AHUV)	Mitigation* (acres)
1	67	352
2	57	289
3†	52	274
4	9	47
5	27	134

* Mitigation acres also include additional impacts to farmed wetlands
† Disposal sites were not identified

Mitigation alternative 5 was selected as the recommended plan to mitigate for the unavoidable impacts of 27 AHUV from harbor construction because it offered the highest habitat value over the project life, offered the highest amount of plant and animal diversity, and required the least amount of land required to be purchased. The impact of 27 AHUV and an additional 14 acres of farmed wetlands would be mitigated by purchasing 134 acres of frequently flooded farmland, creating topography by excavating lower areas and placing the excavated material randomly throughout the tract to create higher elevations, and planting the site with a mixture of bottomland hardwoods conducive to the expected flooding frequency.

Alternative 6 - No Action

AHUV gains are expected to wildlife resources under the no action alternative because of plant succession and increases in terrestrial habitat (additional silted in areas of Slab Fill Chute). No changes to wildlife resources are expected in areas landside of the levee.

4.3.2.2 Site Development

Impacts to wildlife resources were not quantified for site development. However, impacts to wetlands would be mitigated at a ratio of 2:1 for vegetated areas and 1:1 for farmed wetlands. Therefore, 25 acres of mitigation would be required for site development. The potential expansion of the industrial area to 1000 acres would impact additional wetlands. A Section 404 permit would be required if the wetlands can not be avoided.

4.3.3 Fishery Resources

Impacts to fishery resources are described in the Fisheries section (Appendix IV, Section VII).

4.3.3.1 Federal Project

Alternatives 1 -5

The backwater area and frequently flooded areas of Old Slough Landing offer suitable habitat for a variety of Mississippi River fishes. Impacts to fishery resources are given in Table 4-6.

Table 4-7
Impacts to fishery resources, Northwest Tennessee Regional Harbor Feasibility Study.

Alternative	Backwater Area (surface acres)	Frequently Flooded Area (surface acres)
1	20	96
2	20	75
3	0	113
4	20	0
5	20	46

Temporary impacts are expected during construction because of an increase in turbidity, total suspended solids, and the disturbance from the dredging and bank protection. Minimal impacts are expected to open water habitat (the first 5,000 feet of channel) because of the small amount of dredging required.

The recommended plan would impact 46 acres of seasonally flooded backwater habitat. This habitat is utilized by a variety of fish species for spawning, foraging, cover, and nursery areas. The loss of 46 acres represents 13% of the seasonally flooded habitat on Old Slough Landing. The remaining 343 acres of black willow habitat would remain intact after construction.

The loss of 46 acres of seasonally flooded habitat would be mitigated by planting bottomland hardwoods on 134 acres of frequently farmland adjacent to the Mississippi River.

Alternative 6 - No Action

Fishery resources would not be impacted under the no action alternative. Increases in populations and diversity are expected to fisheries throughout the lower Mississippi River due to better water quality from environmental laws, changes in navigation features (i.e., hard points, notched dikes), increased management from state resource agencies (more

stringent regulations), and an increase in the general public's awareness of the Mississippi River and its resources.

4.3.3.2 Site Development

Alternatives 1 – 3

No impacts are expected.

Alternatives 4-5

Temporary impacts are expected from the additional amount of dredging required for fill.

4.3.4 Mussel Resources

Alternatives 1 - 5

Dredging would impact available mussel habitat. No significant concentrations or populations of freshwater mussels were found in the harbor area. No significant impacts to freshwater mussels are expected.

Alternative 6 – No Action

No impacts to freshwater mussels are anticipated from the no action alternative.

4.4 Cumulative Impacts

Cumulative impacts are defined as the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (CEQ, 1978). Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

4.4.1 Past Actions

Past actions within the area have converted the landscape from a largely forested area, to a major timber exporting area, to an agriculturally dominated community present today.

Prehistoric Overview

Buchner (2000) provided a prehistoric overview of the study area.

The meander patterns of the Mississippi River greatly influenced the habitat of the area. The geomorphic history of the study area and vicinity reveal that deposits are Holocene aged. Point bar deposits of old meander belts, abandoned channels, and neck and chute cutoffs are found throughout the area and are approximately 3,000 years old.

The study area is part of the Mississippi Embayment Section of the Western Mesophytic Forest Region. The area was historically forested prior to settlement. Most of the high ground at Tiptonville and north to Cronanville and Cates Landing was mot likely a Tulip-Oak Forest. Floral species included tulip poplar, basswood, chinkapin oak, shumard oak, beech, elm, and hackberry.

The earliest human occupational periods, Paleo-Indian (9,500 – 8,500 B.C.) and the transitional Paleo-Indian Dalton (8,500 – 7,900 B.C.) are not well represented in the study area as a result of the relative youth of the landforms. The nearest surfaces that could yield Paleo-Indian material lie southeast of Reelfoot Lake at the base of the uplands and across the Mississippi River on Sikeston Ridge.

Settlement within the study area most likely began during the Archaic period (Early Archaic 7, 900 – 5,000 B.C. Middle Archaic 5000 – 3,000 B.C., and Late Archaic 3,000 – 1,000 B.C.). The number of settlements in the study area increase from two Early Archaic components to 11 Late Archaic components.

The Woodland period (1,000 B.C. to A.D. 800) is poorly represented locally and regionally in the study area. The local floodplain has stabilized by this period and humans had adapted to it, as over 50 Late Woodland/Early Mississippian components are present.

During the Mississippi period (A.D. 800 -1541) the regional population remained concentrated in the Reelfoot Basin and other Mississippi River floodplain areas to the south. Most sites date prior to 1300.

The Otto Sharp is Protohistoric (postdates De Soto) and represents the final aboriginal occupation of the Reelfoot Lake region.

1800's

Agricultural development by early settlers began along the banks of the Mississippi River during Colonial times and as early as 1790. Forested lands were begun to be cleared during this period to cultivate corn, cotton, wheat, tobacco, flax, and corn (USACE, 1998).

Reelfoot Lake was formed by the New Madrid earthquakes of 1811 and 1812. Prior to the earthquake, it is generally accepted that the area was an extensive forested wetland. Richard Meriwether was one of the first settlers to Lake County around 1825 (Buchner, 2000). Prior to the Civil War, development in the area was limited. By the mid-1800's, the Tiptonville area had begun to develop as a shipping and receiving point for river traffic and slowly expanded into an agriculturally based community. Cotton and the timber industry made up the economic base of the area.

Congress commissioned the Army Corps of Engineers to begin Mississippi River improvements in the 1830's. The Corps' first action was to remove stumps, snags, and other hazards to navigation. A more intricate plan was necessary to deepen the river's

channel and regulate flow rates. In 1866, portions of the Mississippi River were so shallow in places that a person could wade across it. The Mississippi River Commission was established in 1879 to harness the Mississippi River for purposes of commerce and development. The minimum channel depth was set at four feet.

During the Civil War, the Confederates set up defenses in the vicinity of Cates Landing at Island No. 10. The town of Tiptonville was apparently destroyed by Federal gunboats during this period. After the Civil War, cotton and lumber were major exports. Two large saw mills were located on the west end of Reelfoot Lake by 1890. Settlement was restricted to the high ground between Tiptonville and the Mississippi River northward to the Cates Landing area.

The 1900's

During 1908 the Reelfoot Lake vicinity became nationally known for violence of the Night Riders (Buchner, 2000). The Night Rider episode was a dispute over title to Reelfoot Lake and the surrounding land. The local citizens regarded the lake as public land although old land claims existed. The West Tennessee Land Company quietly purchased these old claims and planned to drain the lake. The public reacted violently. On October 19, 1908 masked riders kidnapped two Tennessee Land Company officers and murdered one. The governor sent out the National Guard and rounded up over 100 prisoners. Six men were sentenced to death. However, the Tennessee Supreme Court overturned their convictions. As a result of this, the state took ownership of Reelfoot Lake in 1914.

Construction of the Mississippi River levees in the area began in the early 1900's. In 1917, Congress authorized Federal participation in the levee building program. This, in conjunction with the Swamp Land Acts, combined to provide further impetus to levee building activities. Following the 1927 flood, the Mississippi River and Tributaries Project was initiated with the passage of the 1928 Flood Control Act. Construction of the Mississippi River mainline levees has been continuous since 1928. The construction of the levees significantly altered the landscape of the area. Preventing flooding allowed for a greater amount of agricultural practices to occur in the area. Many forested areas were cleared and agriculture thrived. This trend continues today.

The Rivers and Harbor Act of 1930 authorized the Corps of Engineers to maintain a nine-foot minimum channel. This is achieved by dredging shallow area, constructing dikes to restrict channel widths, and stabilizing the banks from erosion. The Cates Casting Field was acquired in 1947 for the purpose of casting concrete mats. Concrete mats were formed by interlocking as many as 50,000 concrete blocks (4 by 25 feet). The mats are placed along the river by specialized mat-sinking units. The site has closed because river stabilization in this reach of river had been completed and presently only requires periodic maintenance.

The Corps of Engineers constructed a harbor in 1970 adjacent to the City of New Madrid, Missouri (Mississippi River Mile 889) as authorized by Section 107 of the River and Harbor Act of 1960. The Federal government maintained the facility until 1992.

In 1980, the Corps of Engineers constructed a harbor at mile 849 along an old right bank chute of the Mississippi River north of the City of Caruthersville, Missouri. The harbor was enlarged by the Corps of Engineers in 2001. The Federal government currently performs annual maintenance.

4.4.2 Present Actions

Reelfoot Lake and agriculture are the major factors that shape the present area.

Reelfoot Lake

The Reelfoot area contains approximately 31,256 acres of publicly owned land and water. TDEC owns and manages the 279 acre Reelfoot State Park and the TWRA owns and manages the 18,700-acre Reelfoot Wildlife Management Area. The USFWS manages the 10,427-acre Reelfoot National Wildlife Refuge (owns 2,580 acres, leases 7,847 acres from the State of Tennessee).

Regional Economy

The Lake County labor force was composed of 2,556 persons in 2000. This represents 37.8% of the county population that is 16 years and older, compared to 63.9% for the entire United States. Per capita income in 2000 for Lake County was $10,794, compared to $21,858 for the national average. Individuals with incomes below the poverty level in 2000 accounted for 23.6% of all persons in the county, compared to 12.4% for the nation. Construction of the harbor and industrial area would create jobs in the area and increase national and regional economic development.

4.4.3 Future Actions

Navigation

An increase in barge traffic is expected to occur upon completion of the harbor and industrial site development. Wave action from barge traffic could cause a slight increase in turbidity and total suspended solids. However, a slight increase should not pose a significant problem to aquatic resources expecting to utilize the harbor. The banks would be stabilized with riprap to prevent erosion.

A total of 324 million tons of goods are annually shipped on the Mississippi River from Minneapolis, Minnesota to Head of Passes, Louisiana. The EPA Office of Compliance (1997) has documented the environmental impacts of the water transportation industry. The proposed harbor would ship 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. No significant cumulative impacts are expected from the increase in barge traffic.

Industrial Development

The NTRPA has indicated that 500 acres of farmland will be rezoned industrial if a harbor is constructed. Potential industries have not been identified. However, it appears that an ethanol plant and a bio-diesel plant may locate to the area in the future. Major industries would undergo a permitting process prior to construction to ensure that all applicable laws and regulations would be followed. Resource agencies, non-governmental organizations, and the general public would be allowed to comment during the permitting process.

Air Quality

Air quality is expected to decrease in the area due to an increase in barge, rail, and truck traffic in the area. The prevailing winds in the area are from the south-southwest. A state operating permit would be required from the Tennessee Division of Air Pollution Control (APC) for any industry that is planning on operating an air contaminant source. Facilities that emit more than 100 tons/year of an air pollutant, 10 tons/year for a hazardous air pollutant, and/or 25 tons/year of a combination of hazardous air pollutants must obtain a Title V Operating Permit. APC reviews each permit application to determine compliance with all applicable air pollution control regulations. APC has the right to conduct inspections at each facility as deemed necessary to ensure that any existing, new, modified, replaced, or relocated source of air pollution complies with all air pollution emissions standards and will not nave a detrimental impact on human health or the environment.

Water Quality

Higher rates of pollutants such as nitrogen, phosphorus, BOD, lead, and zinc have been documented in high-intensity industrial and commercial areas. The industrial area has been moved outside of the Reelfoot Lake drainage area. Drainage would be towards Graveyard Slough. Industry that discharges pollutants directly from point sources into surface waters must obtain an NPDES discharge permit from TDEC. Direct dischargers include industrial and commercial wastewater, industrial stormwater, and municipal wastewater discharges. Industries sending wastewater to public sewers are considered indirect discharges. These industries must obtain a discharge permit from the local public sewer. The Town of Tiptonville operates the closest wastewater treatment plant, which has a capacity of 1.5 MGD. A major user would most likely have to treat wastewater on-site and discharge to surface water.

Water Quantity

The Town of Tiptonville currently operates a water supply system with a capacity of 1.44 MGD and has a usage of 0.8 MGD (1997 level). A major industrial water user would most likely have to access water directly from the groundwater aquifer. Groundwater withdrawls from major users should not significantly impact the aquifer in the area.

Energy Needs

Electrical, gas, and telecommunication services currently service the state prison south of the industrial area. Utilities would have to be expanded to service the area. Large industrial operations would most likely require separate lines to be constructed.

Transportation

Traffic is expected to increase in the Tiptonville area due to increases in truck traffic. Highway 78 from Tiptonville to Dyersburg and Highway 22 from Tiptonville to Union City may have to be modified to accommodate additional and heavier traffic. Expected increases to the local employment would also increase traffic on local roads.

Noise

Noise is expected to increase in the area due to an increase in barge, rail, and truck traffic. Industrial noise would also impact the area. With the exception of a small community located along the levee, the industrial area is in a rural area and should not pose a significant impact to area residents.

Hazardous and Toxic Materials Including Industrial Waste

Industrial pollution would be regulated under existing environmental laws (e.g., Clean Air Act, Resource Conservation Recovery Act, Comprehensive Environmental Response and Liability Act, Clean Water Act). However, there is always the potential for industrial accidents. Drainage in the area is to Graveyard Slough and prevailing winds are from the south south-west.

Chip Mill

The TWRA and FWS expressed concerns of the timber industry and the possibility of chip mills locating in the industrial area. The impacts of chip mills on the Tennessee River have been well documented. The TVA and the Nashville District Corps of Engineers denied permits to chip mill facilities based on the cumulative impacts to forest resources. Impacts of a potential chip mill are discussed in the Chip Mill report (Appendix IV, Section XII).

Discussions were made about the possibility of excluding chip mills from the harbor. The proposed harbor would be a public harbor built with public funds. Therefore, exclusions can not be placed on certain types of industry wishing to utilize the harbor. There are no known chip mills intending to locate on the harbor. It is very unlikely that a chip mill would locate to northwest Tennessee in the near future.

4.4.4 Conclusions

The cumulative impacts from the present agricultural community and proposed harbor and industrial development could cause degradation to air and water quality, elevated

noise levels, and changes to visual resources (aesthetics). Additional infrastructure (roads and utilities) may have to be modified to keep up with industrial development. Existing environmental laws would regulate the industrial development in the area. Therefore, no significant cumulative environmental impacts are expected.

4.5 Environmental Justice

Executive Order 1298 requires that each Federal agency "…shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health of environmental effects of its programs, policies, and activities on minority populations and low-income populations…"(IWR, 1996). In addition, the order requires Federal agencies "to analyze the environmental effects on minority communities and low-income communities, when such analysis is required by NEPA (CEQ, 1997).

Minority populations make up 33% of the Lake County population. Per capita income in 2000 for Lake County was $10,794, compared to $21,858 for the national average. Individuals with incomes below the poverty level in 2000 accounted for 23.6% of all persons in the county, compared to 12.4% for the nation. U.S. Census Bureau statistics are given in Table 4-7.

Table 4-8
Lake County Statistics, Source U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, 2000 Census of Population and Housing, 1990 Census of Population and Housing, Small Area Income and Poverty Estimates, County Business Patterns, 1997 Economic Census, Minority- and Women-Owned Business, Building Permits, Consolidated Federal Funds Report, 1997 Census of Governments

Lake County Statistic	Lake County	Tennessee
Population, 2001 estimate	7,764	5,740,021
Population percent change, April 1, 2000-July 1, 2001	-2.4%	0.9%
Population, 2000	7,954	5,689,283
Population, percent change, 1990 to 2000	11.6%	16.7%
Persons under 5 years old, percent, 2000	5.0%	6.6%

Table 4-7 Continued

Persons under 18 years old, percent, 2000	17.7%	24.6%
Persons 65 years old and over, percent, 2000	13.3%	12.4%
Female persons, percent, 2000	39.8%	51.3%
White persons, percent, 2000 (a)	66.6%	80.2%
Black or African American persons, percent, 2000 (a)	31.2%	16.4%
American Indian and Alaska Native persons, percent, 2000 (a)	0.4%	0.3%
Asian persons, percent, 2000 (a)	0.1%	1.0%
Native Hawaiian and Other Pacific Islander, percent, 2000 (a)	0.0%	Z
Persons reporting some other race, percent, 2000 (a)	0.6%	1.0%
Persons reporting two or more races, percent, 2000	1.0%	1.1%
Persons of Hispanic or Latino origin, percent, 2000 (b)	1.4%	2.2%
White persons, not of Hispanic/Latino origin, percent, 2000	66.2%	79.2%
Living in same house in 1995 and 2000, pct age 5+, 2000	58.2%	53.9%
Foreign born persons, percent, 2000	0.5%	2.8%
Language other than English spoken at home, pct age 5+, 2000	3.6%	4.8%
High school graduates, percent of persons age 25+, 2000	56.0%	75.9%
Bachelor's degree or higher, pct of persons age 25+, 2000	5.4%	19.6%
Persons with a disability, age 5+, 2000	1,726	1,149,693
Mean travel time to work, workers age 16+ (minutes), 2000	20.4	24.5
Housing units, 2000	2,716	2,439,443
Homeownership rate, 2000	60.0%	69.9%
Housing units in multi-unit structures, percent, 2000	20.7%	18.7%
Median value of owner-occupied housing units, 2000	$53,000	$93,000
Households, 2000	2,410	2,232,905
Persons per household, 2000	2.36	2.48
Median household money income, 1999	$21,995	$36,360
Per capita money income, 1999	$10,794	$19,393
Persons below poverty, percent, 1999	23.6%	13.5%

The majority of the project would occur in rural areas. Minor impacts to residents that occur along the proposed road and railroad access routes would be expected. However, the small community made up of mobile homes located at Highway 22 and New Markham Road could be affected by the project. This area occurs between the proposed industrial area and port facility. Relocation of the area is not planned. Impacts (positive and negative) from the industrial area and port facility are expected on area residents. Negative impacts could include degradation to air quality and elevated noise levels. A demographic survey of this area has not been conducted. However, field observations suggest that income in this area varies from low to middle class. Positive impacts could include the creation of better paying jobs associated with the construction (temporary employment) and operation (permanent employment) of the harbor, port facility, and

industrial area. No comments related to environmental justice were received during the scoping process. The public notice that described the recommended plan and stated the availability of the draft EA was delivered to all residents in the area. No negative comments related to environmental justice were received.

5.0 Coordination

The draft EA underwent a 30-day comment period. A public notice that stated the availability of the draft EA, requested water quality certification from the State of Tennessee, and solicited input for the 401-certification was disseminated. Notices were sent to the following government agencies, elected officials, Indian tribes, organizations, businesses, and the general public:

Federal Agencies

- Department of Agriculture
  - National Resources Conservation Service
    - State Conservationist, Nashville, Tennessee
    - County Extension Services, all West Tennessee counties
- Department of Commerce
  - Economic Development Administration, Atlanta, Georgia
- Department of Homeland Security
  - U.S. Coast Guard, Memphis, Tennessee
  - Federal Emergency Management Association, Atlanta, Georgia
- Department of the Interior
  - U.S. Geological Survey, Nashville, Tennessee
  - U.S. Fish and Wildlife Service
    - Southeast Regional Archaeologist, Savannah, Georgia
    - Ecological Services Tennessee Field Office, Cookeville, Tennessee
- Department of Transportation
  - Federal Highway Administration, Nashville, Tennessee
- Environmental Protection Agency, Region IV, Atlanta, Georgia
  - Wetlands Section
  - Office of Environmental Assessment
- Tennessee Valley Authority, Jackson, Tennessee

State Agencies (Tennessee)

- Department of Agriculture
  - Agribusiness Development Market Development Division, Nashville, Tennessee
  - Division of Forestry, Nashville, Tennessee
- Department of Economic and Community Development, Nashville, Tennessee
- Department of Environment and Conservation
  - Division of Water Pollution Control, Nashville, Tennessee
  - Division of Natural Heritage, Nashville, Tennessee

Governor's Policy Office, Nashville, Tennessee
Jackson Environmental Assistance Center, Jackson, Tennessee
West Tennessee Basin Authority, Humboldt, Tennessee
Department of Transportation, Nashville, Tennessee
Tennessee Commission of Indian Affairs, Nashville, Tennessee
Tennessee Historical Commission, Nashville, Tennessee
Tennessee Wildlife Resources Agency, Nashville and Jackson, Tennessee

Local Agencies

Dyer County, Tennessee
Lake County, Tennessee
Obion County, Tennessee

The City of Tiptonville, Tennessee
The City of Ridgely, Tennessee
The City of Dyersburg, Tennessee
Union City, Tennessee

Elected Officials

Congressman Marsha Blackburn's Office
Congressman Harold Ford, Jr.'s Office
Congressman John Tanner's Office

Senator Bill Frist's Office
Senator Lamar Alexander's Office

Federally Recognized Indian Tribes

Choctaw Indian Nation, Durant, Oklahoma
Eastern Shawnee Tribe of Oklahoma, Seneca, Missouri
Mississippi Band of Choctaw Indians, Philadelphia, Mississippi
Quapaw Tribe, Fayetteville, Arkansas
The Chickasaw Nation, Ada, Oklahoma, and Washington, D.C.
Tunica-Biloxi Indians of Louisiana, Marksville, Louisiana

Non-Governmental Organizations

Mississippi Valley Flood Control Association, Memphis, Tennessee
Sierra Club, Chickasaw Group, Memphis, Tennessee
The Nature Conservancy, Brownsville, Tennessee
The Wolf River Conservancy, Memphis, Tennessee
National Waterways Association

The draft EA was made available to all persons and business who responded to the scoping notice and all parties that are currently on the Memphis District's database for permit and NEPA actions.

A copy of EA was placed in the following local libraries:

McIver Grant Public Library
204 Mill Street
Dyersburg, TN

Tiptonville Public Library
126 Tipton Street
Tiptonville, TN

Obion County Public Library
1221 Reelfoot Ave.
Union City, TN

A copy of the EA was posted on the Memphis District's Homepage and could be viewed at:

http://www.mvm.usace.army.mil/regulatory/public-notices/pn.htm

Letters of support were received from 10 elected officials, six state government agencies, 31 private businesses, 11 non-governmental organizations, and 64 private citizens. Concerns were expressed by the Environmental Protection Agency, Natural Resources Conservation Service, and Fish and Wildlife Service. The Fish and Wildlife has concurred with the findings of the biological assessment. The Tennessee Historical Commission stated that the Memorandum of Agreement adequately addresses the potential affects and allows for phased identification and assessment for potential historic properties in areas of the project area not yet subjected to archaeological survey. The Tennessee Department of Environment and Conservation, Division of Water Pollution Control issued Section 401 Water Quality Certification (contingent on mitigation) on 16 July 2004. Comments received from coordination and responses are provided in Appendix IV, Section XIII.

5.1 U.S. Fish and Wildlife Service Coordination Act Report

Funding was provided to the Fish and Wildlife Service to furnish a Coordination Act Report. A copy of the report can be found in Appendix IV, Section VI. The Service made the following recommendations:

1) The wetland mitigation site will be acquired before project construction begins.

   The wetland mitigation site would be identified and a site specific plan would be coordinated with applicable resource agencies. However, acquisition of the site would be accomplished concurrently with other project features.

2) The wetland mitigation site should consist of prior converted cropland where wetland functions, including the hydrologic function, have been lost and the site is restorable to jurisdictional wetland criteria.

   Concur.

3) The appropriate resource agencies will be allowed to review and comment on all proposed mitigation sites before purchase.

   Concur.

4) The appropriate resource agencies will be allowed to review and comment on all proposed site specific mitigation and monitoring plans before implementation.

   Concur.

5) The mitigation site will consist of one tract of land or tracts that adjoin one another to form one contiguous tract. Multiple tracts not adjoining one another would be acceptable if they joined a National Wildlife Refuge or a Wildlife Management Area.

   Every effort would be made to conduct compensatory mitigation on one contiguous tract. Tracts adjoining National Wildlife Refuges or state wildlife management areas would be given priority throughout the site selection process.

6) The mitigation site will be protected in perpetuity.

   Concur.

7) If a suitable mitigation site can not be acquired before project construction begins, the loss of wetland functions should be compensated by purchasing the appropriate amount of credits from an approved wetland mitigation bank.

   Wetland mitigation banks would be considered if suitable mitigation sites can not be identified. However, the use of mitigation banks must meet current Corps of Engineers Civil Works policies and guidance.

8) Restoration of the wetland mitigation site will be completed prior to the completion of the harbor channel.

   A site specific mitigation plan would be coordinated with applicable resource agencies prior to harbor construction. Restoration of the mitigation site would be completed concurrently with construction of other project features.

9) The Corps and project sponsor's responsibilities to fully mitigate wetland losses will not be released until all parties, including the Service and other resource agencies concur that the wetland mitigation site successfully replaces wetland losses.

   Concur.

10) 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.

   Concur.

6.0 CONCLUSION

6.1 RELATIONSHIP OF PLAN TO ENVIRONMENTAL LAWS AND REGULATIONS

The relationship of the recommended plan to the requirements of environmental laws, executive orders, and other policies are presented below (IWR, 1996):

Federal Policies and Acts	Compliance Status
Clean Air Act Amendments of 1970	1
Clean Water Act of 1972, as amended	2
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
National Environmental Policy Act of 1969	2*
National Historic Preservation Act of 1966, as amended	2
River and Harbor Flood Control Act of 1970	1
Water Resources Planning Act of 1965	1
Executive Orders	
Floodplain Management (E.O. 11988)	1
Protection, Enhancement of the Cultural Environment (E.O. 11593)	2
Protection of Wetlands (E.O. 11990)	1
Environmental Justice (E.O. 1298)	1

Other Federal Policies

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

6.2 Conclusion

This office has assessed the environmental impacts of various project alternatives. Unavoidable impacts of the recommended plan would be mitigated. No remaining significant impacts to wildlife, aquatic resources, cultural resources, endangered or threatened species, vegetation, floodplain management, wetlands, recreation, HTRW, air quality, water quality, or prime and unique farmlands are expected. There are no direct impacts or foreseen cumulative impacts that would have a significant impact on human health or the environment. Therefore, an environmental impact statement is not warranted. Pending public review of this document, a FONSI would be prepared.

7.0 List of Preparers

The interdisciplinary study team was made up of engineers, economists, real estate specialists, and biologists. The study team is listed in Table 7-1.

For additional information concerning this environmental assessment contact Danny Ward at (901) 544-0709 or daniel.d.ward@mvm02.usace.army.mil.

Table 7-1. Interdisciplinary study team members

Name	Title	Primary Responsibility
James Lloyd	Civil Engineer	Project Manger
Ian McDevitt	Economist	Economic Analysis
Melissa Mullen	Civil Engineer	Geotechnical Analysis
Joe Pentecost	Cost Engineer	Cost Analysis
Kandi Waller	Civil Engineer	Harbor Designer
Jim McNeil	District Archaeologist	Cultural Resources
Danny Ward	Fishery and Wildlife Biologist	NEPA Analysis
Doug Young	Real Estate Specialist	Real Estate Analysis

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