

APPENDIX 2

SECTION 404(b) (1) EVALUATION

YAZOO BACKWATER AREA REFORMULATION

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YAZOO BACKWATER AREA REFORMULATION

APPENDIX 2 SECTION 404(b) (1) EVALUATION

INTRODUCTION

1. As required by Section 404(b)(1) of the Clean Water Act, this evaluation assesses the short- and long-term impacts associated with the discharge of dredged and/or fill materials into waters of the United States resulting from this project.

PROJECT DESCRIPTION

LOCATION

2. The Yazoo Backwater Project Area is located in west-central Mississippi and lies between the left descending bank of the mainline Mississippi River levee on the west, the west bank levees of the Whittington Auxiliary Channel and the Connecting Channel on the east, and the Yazoo River on the south. The area, which includes portions of Humphreys, Issaquena, Sharkey, Warren, Washington, and Yazoo Counties, Mississippi, and part of Madison Parish, Louisiana, contains approximately 926,000 acres and is subject to headwater flooding from the Yazoo and Sunflower Rivers and Steele Bayou and backwater flooding induced from high stages on the Mississippi River. Only 4,644 acres (0.73 percent of the 100-year Yazoo Backwater flood plain) are located in Madison Parish, Louisiana. The Yazoo Backwater pump construction site is located entirely in Issaquena County, Mississippi. The site lies west of the Steele Bayou structure between the Yazoo River and Steele Bayou.

GENERAL DESCRIPTION OF RECOMMENDED PLAN

3. A full range of alternative plans that addressed flooding in the Yazoo Backwater Area was considered. These included nonstructural features, structural features, and combined nonstructural and structural features.

4. The recommended plan (Plan 5) includes both structural and nonstructural features. This plan consists of a 14,000-cubic-foot-per-second pump with a year-round pump elevation of 87.0 feet, National Geodetic Vertical Datum (NGVD), at the Steele Bayou structure. Additionally, the plan includes voluntary perpetual easements and establishment of forests/conservation features on up to 55,600 acres of open land primarily below 87.0 feet, NGVD (1-year flood plain).

5. General plans for the construction site are shown in Plate 4-14. Features of the recommended plan subject to Section 404 of the Clean Water Act and addressed in this evaluation are construction activities involving the discharge of dredged or fill materials into waters of the United States, including forested wetlands and open water.

PURPOSE AND AUTHORITY

6. The purpose of the proposed project is to reduce flooding in the Yazoo Backwater Area. Project authority is the Flood Control Act of 18 August 1941.

GENERAL DESCRIPTION OF DREDGED OR FILL MATERIAL

General Characteristics of Material

7. Fill material used in Yazoo Backwater Project construction would predominantly consist of clay with some silt, sand, gravel, cement, and riprap for other project features. Dredged material from the periodic maintenance dredging would predominantly consist of silt and clay.

Quantity of Material

8. Approximately 1,080,740 cubic yards of fill material will be required to construct roadways, levees, and backfill in the pump station area. Most of this material will come from excavation of the remaining channel and cofferdam. Additional fill material (350,200 cubic yards) will come from two adjacent borrow areas (approximately 23 acres total). Fill material will be deposited by dragline and truck. Most of the material will be deposited on land. However, a small amount could be deposited in waters (includes wetlands) of the United States regulated by Section 404 guidelines. Anticipated project maintenance requirements over the 50-year project life will entail the periodic removal and deposition of an estimated 80,000 cubic yards of sediment accumulations from the inlet and outlet channels. This material will be deposited in the borrow area .

Source of Material

9. With exception of gravel, riprap, and concrete, fill materials would be generated onsite from construction associated with the pump station site, inlet and outlet channels, and various roadways and levees.

DESCRIPTION OF THE PROPOSED DISCHARGE SITES

Location

10. The discharge would be at the pump station site, inlet and outlet channels, various roadways and levees, and borrow area (see Plate 4-14).

Size

11. Acreages impacted by proposed project construction would total approximately 38 acres of forested wetlands and 5.6 acres of open water, including 0.9 acre of Cypress Lake.

Types of Sites

12. There are two adjacent borrow areas associated with the pump station and its appurtenances, along with several sites for roadway and levee construction (Plate 4-14). Approximately 0.9 acres of Cypress Lake, located adjacent to Highway 465, may be filled during roadway construction or realignment. The remaining 4.7 acres of open water that will be filled are in low areas formed during construction of the cofferdam in 1987. These open waters are seasonal, shallow ponds that are sustained by precipitation.

Types of Habitat

13. Habitat types include forested wetlands and open water. The forested wetland habitat is dominated by sugarberry, boxelder, bitter pecan, and buttonbush, with rattan vine and muscadine as common vines. Other less common species include Nuttall oak, bald cypress, and black willow.

Timing and Duration of Discharge

14. Discharge timing would depend on preconstruction planning and construction activities. Construction is anticipated to begin in 2008 or whenever the Record of Decision is signed and be completed approximately 4 years after startup. The timing of periodic maintenance dredging in the inlet and outlet channels will depend upon hydrologic events and the rate of deposition in these channels.

DESCRIPTION OF DISPOSAL METHOD

15. Fill material for disposal, realignment of levee, backfill around the pump station, and construction of roadways would be transported and deposited by truck, bulldozer, and/or dragline. With the exception of gravel, riprap, and concrete, all fill material would be generated onsite. Material from the periodic maintenance dredging will be placed into the disposal areas located on the pump station site.

FACTUAL DETERMINATIONS

PHYSICAL SUBSTRATE DETERMINATIONS

Substrate, Elevation, and Slope

16. The inlet and outlet channels, partially constructed in 1987, will form a secondary means of transferring floodwaters from the Yazoo Backwater Project Area into the Yazoo River via a pump station when the Steele Bayou structure gates are closed to prevent Mississippi River backwater flooding. There will be no change in substrate, elevation, or slope within Steele Bayou, the Connecting Channel, or the Yazoo River. When completed, the inlet channel will be 3,065 feet long and have a bottom elevation of 65.0 feet, NGVD, and side slopes of 1 on 4. When completed, the outlet channel will be 4,048 feet long and have a bottom elevation of 76.0 feet, NGVD, transitioning to 68.0 feet, NGVD, approximately 1,538 feet downstream of the pump station. Side slopes for the outlet channel will also be 1 on 4. The banks of the inlet and outlet channels will be armored to prevent erosion at their confluence with Steele Bayou and the Yazoo River. Any erodible soils on the channel slopes will be protected by filter fabric and riprap to reduce the potential for erosion.

Sediment Type

17. Sediments will consist predominantly of clays and silts.

Dredged/Fill Material Movement

18. Any movement of dredged or fill material after placement at the pump station site would be insignificant.

Physical Effects on Benthos

19. During construction, deposition of fill material would unavoidably impact benthic organisms in the 5.6 acres of surface water affected. Periodic maintenance dredging of the inlet and outlet channels would unavoidably disturb benthos inhabiting the channels. Maintenance dredging, however, is only predicted to be needed once or twice during the life of the project.

Actions Taken to Minimize Impacts

20. The impacts associated with construction of the pump station in the lower end of the drainage basin and the deposition of dredged or fill material in the identified open waters and wetlands are unavoidable. The major portion of lands impacted by construction and deposition of fill material will be isolated from neighboring water bodies by dikes and existing levees. Unavoidable impacts will be further minimized by the application of best management practices

for nonpoint source pollution at the construction site. These nonpoint source control measures will include silt screens, buffer zones, and containment dikes. The construction site will be reseeded to stabilize the soil and prevent aerial drift of dust once construction activities are completed. A Stormwater Prevention Plan (SWPP) that outlines the specific steps that will be utilized to minimize nonpoint source runoff will be filed with the Mississippi Department of Environmental Quality (MDEQ). The greatest potential for substrate movement would be when the inlet and outlet channels are connected to Steele Bayou and the Yazoo River. Effects would be temporary and would be minimized by the use of land based equipment wherever possible. When completed, the banks of the inlet and outlet channels will be armored to prevent erosion at their confluence with Steele Bayou and the Yazoo River. Any erodible soils on the channel slopes will be protected by filter fabric and riprap to reduce the potential for erosion. Channel banks will be seeded once slopes are completed. Material removed from the channels during periodic maintenance dredging will be placed in the designated borrow/disposal areas at the pump station site.

WATER CIRCULATION, FLUCTUATIONS CHEMICAL, AND PHYSICAL DETERMINATIONS

Water

21. Most of the changes to water quality will be within the normal range of values observed during any year. Impacts will depend upon the time of year and the ambient concentrations in each of the receiving water bodies. Impacts to water quality could be caused by stormwater runoff at the construction site, by increases in turbidity when the inlet and outlet channels are unwatered, by increases in turbidity when the inlet and outlet channels are connected to Steele Bayou and the Yazoo River, and by increases in turbidity during periodic maintenance dredging. Impacts to water quality resulting from project construction activities include short-term localized increases in turbidity and suspended solids due to rainfall runoff at the construction site.

a. Salinity. No impacts to existing salinity conditions are anticipated.

b. Water chemistry. Changes to water chemistry could occur within the mixing zone such that sorbed materials on soil and sediment particles become dissolved or suspended in the water column. During construction, most of the pump station site will be isolated from Steele Bayou and the Yazoo River by a cofferdam. The most likely periods for increases in suspended sediment would be during unwatering of the inlet and outlet channels, particularly as the water levels in the two channels approach the channel bottom surface elevations and when the channels are connected to Steele Bayou and the Yazoo River. Increases in turbidity would depend upon the time of year and the ambient concentrations in each of the receiving water bodies. Turbidity outside the mixing zone will be monitored to ensure concentrations do not exceed the state criterion. Other than localized short-term increases in suspended solids and turbidity, there will be no impacts to water chemistry from construction activities at the pump station site or from periodic maintenance dredging of the inlet and outlet channels.

- c. Clarity. The localized increases in turbidity caused by construction would have an effect on clarity. The preexisting condition for clarity should return shortly after the proposed construction is completed.
- d. Color. Any changes in water color would be temporary and minor.
- e. Odor. Construction operations would result in the release of odors otherwise contained. However, this condition is not expected to be hazardous and would be localized and short-lived.
- f. Taste. Not applicable. There are no potable water intakes in the immediate vicinity of the proposed discharge sites.
- g. Dissolved gas levels. Increased organic loadings due to construction activities could increase biological and chemical oxygen demand and reduce dissolved oxygen levels (DO). However, DO levels would return to preconstruction levels following completion of construction activities.
- h. Nutrients. Sediment disturbance during construction would cause temporary increases in nutrient levels. Such increases would be of short duration, and nutrient levels would return to preconstruction levels following completion of construction.
- i. Eutrophication. Eutrophication is not expected to result from the temporary and minor increase in nutrients that may reach area surface waters during construction.
- j. Current patterns and circulation. Completion of inlet and outlet channels will connect the pump station to Steele Bayou and the Yazoo River. This will allow floodwater to be pumped across the Yazoo Backwater levee when Steele Bayou gates are closed. While this would result in a slight change in current pattern, impacts will not be significant.
- k. Velocity. Deposition of dredged or fill material into the designated disposal areas will have no effect on velocities within the Yazoo Backwater Study Area. Operation of the backwater pump station should not impact velocities within the Mississippi River, Yazoo River, Steele Bayou, and Big Sunflower River. Velocities of flow in the pump inlet and outlet channels at full capacity will be less than 3 feet per second, quickly decreasing to less than 2 feet per second upstream of the trash rack and downstream of the pump outfall. During low-water periods, both channels will become slack-water areas. Water levels in the outlet channel will fluctuate with water levels in the Yazoo River. While water levels in the inlet channel would fluctuate with water levels behind the Steele Bayou structure, minimum water surface elevations would be between 70.0 and 73.0 feet, NGVD.
- l. Stratification. Water temperatures in the immediate construction area may be affected due to short-term increases in turbidity during construction. Any impact resulting in a change in stratification processes would be minor and temporary.

m. Hydrologic regime. The Yazoo Backwater project would provide for the reduction in interior flooding during those times when gravity outflow through the existing Steele Bayou structure is not possible. Pumping will change the water surface of floods greater than the 1-year frequency flood. These changes to flood extent and duration would be slow and gradual. The actual change in the water surface elevation will be greatest near the pump station and less in the headwaters. At the Steele Bayou structure, Plan 5, for example, would reduce the 2-year flood from 91.0 to 87.8 feet, NGVD, and reduce the flood volume by 38.6 percent. Plan 5 would reduce the 100-year flood from 100.3 to 95.7 feet, NGVD, and reduce the flood volume by 42.6 percent. Both are significant volume reductions for a backwater flood. Flood elevations of the 1-year flood will remain the same, 87.0 feet, NGVD. Hydrologic changes could alter the duration on up to 66,945 acres of wetlands to some extent and potentially cause the loss of 26,277 acres of wetlands currently inundated 14 days or more (Federal definition of wetland). The analysis that determined impacts to these wetland acres was worst case. Impacts from these physical changes are minimized by virtue of conservative assumptions, mitigation, and reforestation. These predicted impacts to wetland hydrology were based on the assumption that backwater flooding is the only source of water to sustain wetlands. The analysis assumes that the 51 inches of annual precipitation do not play an important role in sustaining wetlands in the Yazoo Backwater Study Area. Because precipitation does likely play an important role in sustaining wetlands, this analysis may be overstating the impact of the Yazoo Backwater project on loss of wetland resources. Impacts to wetlands from changes in hydrology are fully compensated for with the nonstructural reforestation/conservation feature.

n. Normal water level fluctuations. Deposition of fill material into the designated disposal areas will have no impact on normal water level fluctuations. Conversion of the 5.6 acres of open water at the construction site will permanently alter normal water level fluctuations in these areas since they will no longer be open water. During operation of the pump station, water level fluctuations would be slow and gradual. If the pump station was the sole means of evacuating floodwater, it would take 25.2 days to reduce the water surface elevation at the Steele Bayou structure from 91.0 to 87.0 feet, NGVD. This amounts to a change of 0.16 foot per day. The actual change in water surface elevation will be greatest at the Steele Bayou structure and less in the headwaters. The Steele Bayou structure is presently operated to control minimum low-flow water levels in Steele Bayou from elevation 68.5 to 70.0 feet, NGVD. After the project is implemented, the structure would be operated to maintain a minimum low-flow water level between 70.0 and 73.0 feet, NGVD. The increase in minimum water levels during periods of low flow will benefit the aquatic ecosystem and associated organisms. Otherwise, water levels behind the Steele Bayou structure and the Yazoo Backwater pump station would not be impacted. Water levels in the completed 19.2-acre outlet channel will fluctuate with water levels in the Yazoo River.

o. Salinity gradients. Not applicable.

Actions That Will Be
Taken to Minimize Impacts

22. During construction, most of the pump station site will be isolated from Steele Bayou and the Yazoo River by levees and dikes. Stormwater runoff will be minimized by implementation of best management practices in accordance with the State of Mississippi laws and regulations. Adverse impacts to water quality associated with removal of vegetation will be minimized by seeding disturbed areas after construction. To the extent practicable, borrow areas are sited on open land. Turbidity will be monitored during activities that remove or resuspend sediment. Additionally, the reforestation/conservation measures on up to 55,600 acres (from willing landowners) within the study area will fully offset construction and hydrologic impacts and provide significant long-term benefits to water quality. The nonstructural reforestation feature would improve the functional capacity of the reforested wetlands.

**SUSPENDED PARTICULATE/
TURBIDITY DETERMINATIONS**

23. The temporary effects of clearing, filling, and/or dredging associated with the proposed project construction would be localized increases in soil erosion and/or turbidity. Eroded material from the construction site may be transported into nearby drainageways. This could result in short-term and localized increases in suspended particulates and turbidity levels. Unwatering the inlet and outlet channels could also cause temporary increases in turbidity, particularly when the water levels in the two channels approach the channel bottom surface elevations. Turbidity increases will also occur when the channels are connected to Steele Bayou or the Yazoo River. Increases in turbidity would depend upon the time of year and the ambient concentrations in each of the receiving water bodies. Increases in turbidity are expected to be short term. Turbidity will be monitored during activities that disturb sediment to ensure that regulatory limits (50 nephelometric turbidity units (NTU) above background) are not exceeded at the mixing zone boundary.

a. Light penetration. Short-term reductions in light penetration are likely to occur during construction activities. These reductions in light penetration are anticipated to be short term and localized to the area adjacent to construction operations. Light penetration levels should return to preconstruction levels soon after construction is completed.

b. DO. Temporary decreases in light penetration from localized increases in turbidity could cause reductions in photosynthesis. This could result in temporary, localized decreases in DO concentrations. The DO should return to preconstruction concentrations once the turbidity clears and photosynthesis rates return to normal.

Toxic Metals and Organics

24. Because the pump station site was never farmed, it is unlikely that the soil has high concentrations of organics or concentration of metals higher than normal regional ranges. Additionally, since the inlet and outlet channels were never connected to Steele Bayou or the Yazoo River, these channels should not have sediment deposits with high concentrations of organics. Prior to periodic maintenance dredging, sediments to be dredged will be sampled and analyzed for toxic metals or organics that have known potential sources in the watershed. Dredged materials will be placed in the disposal area at the pump station site.

Pathogens

25. While coliform and enterococci bacteria may be present in project waters, project construction would not affect this condition.

Esthetics

26. Construction of the pump station will have short-term impacts on the natural esthetics adjacent to the pump station site. Turbidity plumes will be created as a direct response to construction activities in and adjacent to area surface waters. The loss of 38 acres of forested wetlands would adversely impact esthetics until vegetation is reestablished. The green space resulting from reestablishment of forest via perpetual conservation easements will improve esthetics significantly.

Pesticides

27. The primary source of pesticides is from nonpoint sources of runoff from agricultural practices in the basin. It is unlikely that pesticides were applied in the vicinity of the construction site. Any pesticides found in the sediment within the inlet and outlet channels should be low in concentration since the channels have not been connected to Steele Bayou, the Connecting Channel, or the Yazoo River. The proposed construction activities will not increase the levels of pesticides. Refer to Appendix 16, Water Quality Analysis, for additional information.

Effects on Biota

28. The temporary reduction in light transmission as a result of erosion associated with construction may temporarily reduce photosynthesis and primary productivity to a minor degree in aquatic areas adjacent to the construction site.

Suspension/Filter Feeders

29. No significant effects.

Sight Feeders

30. No Significant Effects. These organisms are generally highly mobile and would avoid or escape any areas of high turbidity.

Actions Taken to Minimize Impacts

31. Disturbed areas would be revegetated as soon as possible following construction. Turbidity will be monitored during activities that disturb sediment to ensure that regulatory limits (50 NTU above background) are not exceeded at the mixing zone boundary.

CONTAMINATION DETERMINATIONS

32. An onsite hazardous, toxic, and radioactive waste (HTRW) assessment of the proposed construction areas was conducted by Corps personnel on 31 July 1998. No indications of hazardous wastes were observed. In addition, a search of MDEQ Office of Pollution Control records for known hazardous or potentially hazardous waste sites, landfills, leaking underground storage tanks, and national priorities list sites was conducted. No known or potential sites were identified within a 1-mile radius of the proposed construction area. An HTRW assessment on proposed easement properties will be conducted after they have been identified and prior to any real estate transaction.

AQUATIC ECOSYSTEM AND ORGANISM DETERMINATIONS

Effects on Plankton

33. Any existing plankton in the immediate area of fill material deposition would be adversely impacted due to elevated turbidity levels. However, these impacts would be localized and short-term. Waters (5.6 acres) to be filled would, unavoidably, no longer be available for use by plankton. This unavoidable adverse impact would be offset by 30.8 acres of water that would be gained by completion of the inlet channel.

Effects on Benthos

34. Some benthic organisms would be adversely impacted by deposition of fill material and by unwatering the inlet and outlet channels to facilitate completion of these channels. The 5.6 acres of water to be filled would, unavoidably, no longer be available for use by benthic organisms.

Benthic habitat on the 34.5 acres within the inlet and outlet channels would temporarily be lost during construction. Completion of the inlet channel would create 30.8 acres of permanent open water behind the Steele Bayou structure. Completion of the outlet channel would create up to 19.2 acres of open water that would fluctuate with the water level of the Yazoo River.

Effects on Nekton

35. Those waters (5.6 acres) to be filled would, unavoidably, no longer be available for use by nekton. However, 30.8 acres of permanent open water would be created by completion of the inlet channel. Completion of the outlet channel would create up to 19.2 acres of open water that would fluctuate with the water level of the Yazoo River.

Effects on Aquatic Food Web

36. The aquatic food web would, unavoidably, be adversely impacted due to the loss of 38 acres of forested wetlands. The aquatic food web would be beneficially impacted by the proposed nonstructural feature (reforestation/conservation measures on up to 55,600 acres via perpetual conservation easements). In the warm, humid climate characteristic of the study area, the bioenergetics of the aquatic system increase during the spring, summer, and fall months. As such, phytoplankton and microbial systems are quick to recover from stress situations during these periods. Effects to the aquatic food web will be minimized by the limiting construction impacts to a small area (the construction site) relative to the study area.

Effects on Special Aquatic Sites

37. Aquatic sites within the Delta National Forest, as well as a number of other aquatic areas in the basin, would experience a long-term improvement in water quality as a result of reforestation/conservation measures on up to 55,600 acres. Any direct impacts, e.g., increased erosion during and at the construction site, would be minor and temporary.

- a. Wetlands. Approximately 38 acres of forested wetlands at the construction site will be unavoidably converted to other uses.
- b. Mudflats. Not applicable.
- c. Vegetated shallows. Not applicable.
- d. Coral reefs. Not applicable.
- e. Riffle and pool complexes. Not applicable.

f. Threatened and endangered species. The U.S. Fish and Wildlife Service (FWS) advised by letter, 10 August 1994, that their records indicate that the threatened Louisiana black bear (*Ursus americanus lutealus*) and the endangered plant pondberry (*Lindera melissifolia*) occur in the proposed study area. The Vicksburg District prepared a final Endangered Species Biological Assessment (BA) (Appendix 14), December 2005, which evaluated the potential effects of the proposed project on these species. The BA concluded that the project is not likely to adversely impact the threatened Louisiana black bear or the endangered plant pondberry. The FWS concurred with the Vicksburg District's determination that the project was not likely to adversely affect the Louisiana black bear (letter of 10 August 2006). While FWS and the Vicksburg District do not agree on the role of backwater flooding on pondberry, FWS concluded the Yazoo Backwater Project would not jeopardize the continued existence of the endangered plant pondberry. The FWS issued a no jeopardy opinion on pondberry on 2 July 2007.

g. Other wildlife. Wildlife wetland habitat (38 acres forested) and associated wildlife would experience unavoidable adverse impacts due to loss of this habitat. Because of the reforestation/conservation measures on up to 55,600 acres primarily below the pump elevation, unavoidable adverse impacts to wildlife wetland habitat would be offset many times over.

h. Actions to minimize impacts. Impacts to terrestrial and aquatic biota will be minimized by limiting impacts to a small area (the construction site) relative to the study area. Impacts at the construction site will be minimized by the application of best management practices for stormwater runoff. An SWPP will be filed with MDEQ, outlining the steps that will be used to reduce nonpoint source runoff. Control measures will include those recommended in the *Mississippi Stormwater Pollution Prevention Plan (SWPPP) Guidance Manual for Construction Activities*. During those construction activities that involve unavoidable soil or sediment disturbance, turbidity will be monitored to ensure that state regulatory limits (50 NTU above background) are not exceeded at the mixing zone boundary.

PROPOSED DISPOSAL SITE DETERMINATIONS

Mixing Zone Determinations

38. The mixing zone will be 750 feet. No water quality criteria should be exceeded by the discharges.

Determinations of Compliance with Applicable Water Quality Standards

39. Changes to water quality conditions as a result of construction or operation of this project are not anticipated to cause long-term changes in the existing water quality within the study area. Only temporary, short-term impacts to water quality are anticipated as a direct result of project construction. These impacts include temporary increases in suspended solids and increases in turbidity levels, which would occur only during construction operations. Completion of the nonstructural flood reduction feature (reforestation) should improve water quality.

Potential Effects on Human Use Characteristics

40. Municipal and Private Water Supply. No significant effects.

41. Recreational and Commercial Fisheries. No significant effects.

42. Water-Related Recreation. Recreational activities would be temporarily curtailed in the vicinity of the proposed discharge site during project construction. Temporary increases in turbidity and suspended sediments during construction activities would adversely impact recreational fishing downstream of discharge sites. These impacts would be minor and localized and occur only during actual construction.

Determination of Cumulative Effects on the Aquatic Ecosystem

43. The requirement for deposition of fill material during construction would add a relatively minimal amount of pollutants to the proposed study area's aquatic ecosystem. Pollutants would primarily be in the form of temporarily increased sediment loads that would result in minor increases in both suspended solids and turbidity. The proposed construction would impact approximately 5.6 acres of open water and create 30.8 acres of permanent water behind the Yazoo Backwater pump station. In addition, reforestation of up to 55,600 acres of currently farmed land will reduce erosion and increase their floodwater filtering capacity for sediment, pesticides, and nutrients. These reforested lands would provide a higher habitat value for spawning and rearing fishes on the flood plain and would increase wetland functional capacity within the 1-year flood plain.

Determination of Secondary Effects on the Aquatic Ecosystem

44. Secondary impacts on the aquatic ecosystem due to construction would be minimal.

FINDING OF COMPLIANCE FOR FLOOD CONTROL

45. No significant adaptations of the Section 404(b)(1) guidelines were made relative to this evaluation.
46. The Yazoo Backwater project will not have an effect on operation of the Muddy Bayou control structure. Currently, the Eagle Lake community (Warren County, Mississippi, and Madison Parish, Louisiana) receives protection from a 50-year frequency flood. Implementation of the proposed Yazoo Backwater project would increase the level of protection for the Eagle Lake community to the 100-year frequency flood.
47. Deposition of fill material associated with construction requirements for the Yazoo Backwater Reformulation Project would adversely impact 38 acres of forested wetlands and 5.6 acres of open water. Integral to the project's design is the inclusion of a plan for voluntary perpetual easements and reestablishment of forest/conservation measures on up to 55,600 acres of open land. This measure would result in significant benefits to fish and wildlife habitat and would offset many times over any project-induced adverse impacts to wetlands.
48. The planned deposition of fill material would not violate any applicable State Water Quality Standards. Further, the planned fill action would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.
49. No endangered species or their critical habitat will be adversely impacted by the planned action (refer to section describing Threatened and Endangered Species).
50. The proposed deposition of fill material would not result in unacceptable adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. Further, the proposed discharges would not result in unacceptable adverse effects on the life stages of aquatic or semiaquatic organisms, the aquatic ecosystem, diversity, productivity, stability, recreation and esthetic resources, and economic values.
51. Appropriate steps to minimize potential adverse impacts of the fill action on aquatic systems include cessation of fill activities during extreme flood events and avoidance of discharges into open water, where possible.
52. On the basis of the Section 404(b)(1) guidelines, the proposed sites for the deposition of dredged and fill material are specified as complying with the requirements of these guidelines.