

# **Attachment A**

## **Section 404(b)(1) Evaluation**

**DRAFT SECTION 404(b)(1) EVALUATION**  
**Mississippi River Mainline Levee**  
**St. Johns Bayou Outlet Ditch Scour Repair**  
**New Madrid County, Missouri**

**I. Project Description**

**a. Location**

The proposed scour control measures are located within and along the banks of the St. Johns Bayou Outlet Ditch, downstream of the St. Johns Bayou outlet structure, adjacent to the right descending bank of the Mississippi River (river mile 890), and east of the town of New Madrid, New Madrid County, Missouri (Figure 1).

**b. General Description**

The U.S. Army Corps of Engineers (USACE), Memphis District (MVM), is proposing a scour repair project that involves dredging approximately three to four feet of the unconsolidated/non-stable substrate and replacing with rip-rap (R-2200 and R-400) and bedding material to stabilize the St. Johns Bayou Outlet Ditch channel, as well as bank shaping to prevent additional erosion. The proposed scour repair locations are presented in Figure 2. The existing area proposed to be excavated, re-shaped, and receive fill is that of one previously disturbed through scour events associated with high Mississippi River stages and downstream proximity from the St. Johns Bayou Outlet Structure (Figures 3 and 4). The left descending bank of the Phase 1 project reach, adjacent to the proposed spoil location, has been previously lined with rip-rap in its entirety while the right descending bank is experiencing scour downstream of prior rip-rap placement below the Outlet Structure. The proposed spoil location was a prior borrow site used for the New Madrid Floodway closure levee adjacent to the St. Johns Bayou Outlet Ditch and Mud Ditch which is currently subject to routine disturbance (e.g., brush hog) and/or agricultural production with few scattered trees along the western boundary (Figure 2). Thus, no potential environmental impacts requiring compensatory mitigation were noted for construction associated with Phase 1 of the St. Johns Bayou Outlet Ditch Repair Project.

**c. Authority and Purpose**

The proposed action is authorized as part of the Flood Control Act of 1928, as amended. The Mississippi River and Tributaries (MR&T) Project is designed to reduce flood risk in the Mississippi River alluvial valley between Cape Girardeau, Missouri and the Head of Passes, Louisiana in and along the Mississippi River and its tributaries. Data analysis of 2020 flood reports and results from hydrologic surveys identified stability, grade, and scour issues within and along the banks of St. Johns Bayou Outlet Ditch that could potentially affect the MRL ability to function as designed.

d. General Description of Dredged or Fill Material

1) General Characteristics of Material

Rip-rap – Bedding stone and rip-rap (R-2200 and R-400) would be placed within the channel bottom and side slopes to repair scour, provide grade control, and prevent additional erosion and scour.

Dredged Material – Excavated material from the channel and side slopes would predominantly consist of sand, silt, and clay soils, as well as existing rip-rap from previous maintenance.

2) Quantity of Material

Rip-rap – Approximately 19,973 tons of R-2200, 6,254 tons of R-400, and 4,001 tons of bedding material would be required.

Dredged Material – Approximately 19,181 cubic yards of material would be excavated from the channel and side slopes.

3) Source of Material

Rip-rap – Rip-rap and bedding material would be provided from commercial sources.

Dredged Material – Approximately 400-feet of channel and side slope excavation within St. Johns Outlet Ditch immediately downstream of the outlet structure (Figure 2).

e. Description of the Proposed Discharge Site(s)

1) Location – Placement of rip-rap would occur within the channel and along the banks of the St. Johns Bayou Outlet starting 70 feet downstream of the outlet structure and continuing for approximately 400 feet, roughly 220 feet upstream from the confluence with Mud Ditch (Figure 2).

2) Size – The St. Johns Outlet Ditch Repair Phase 1 proposed rip-rap footprint placement area is approximately 2.3 acres.

3) Type(s) of Habitat – The available habitat within the proposed Phase 1 rip-rap placement area primarily consists of a channel previously disturbed through scour events associated with high Mississippi River stages and downstream proximity from the St. Johns Bayou Outlet Structure and banks previously lined with rip-rap or experiencing scour downstream of prior rip-rap placement (Figures 3 and 4).

4) Timing and Duration of Discharge – Proposed construction is scheduled to commence in the fall/winter of 2023/24 and is anticipated to be complete by summer 2024.

f. Description of Disposal Method

Rip-rap deposition within the channel and along the banks of St. Johns Bayou Outlet Ditch would occur from barge during high water periods using conventional earth moving equipment (e.g., bulldozers and excavators).

**II. Factual Determinations**

a. Physical Substrate Determinations

- 1) Substrate Elevation and Slope – The existing St. Johns Bayou Outlet Ditch channel bottom would be dredged, re-shaped, and stabilized with rip-rap and bedding material to an approximate elevation of 258 feet for roughly 400 feet; while the banks would be sloped to an approximate 3:1 slope and tie in to existing top bank at elevation 281-284 NAVD 88.
- 2) Sediment Type – Soils in the project area are predominately Commerce and Sharkey silt clay.
- 3) Dredged/Fill Material Movement – Rip-rap would be moved to, and deposited in, the project area via barge during high water. Material would be excavated from the channel and banks and would be deposited with bulldozers and excavators at the proposed spoil location.
- 4) Physical Effects on Benthos – Placement of fill material would have a minimal impact on benthos. Water flow within the St. Johns Outlet Ditch is dependent on heavy rainfall within the St. Johns Bayou Basin and backwater from the adjacent Mississippi River and normally carries a heavy sediment load. However, turbidity and suspended solids would be increased to minor degrees during construction but are anticipated to return to normal shortly after construction ceases.
- 5) Other Effects – N/A
- 6) Actions Taken to Minimize Impacts – The following best management practices would be implemented during construction to minimize impacts:
  - Effective erosion control would be in place prior to construction and maintained throughout the construction period.
  - Construction would take place during periods of high water, minimizing potential impacts to adjacent riparian areas.
  - All disturbed areas would be seeded within 30 days after construction is completed.
  - Construction debris would be kept from entering adjacent wetlands and shall be disposed of properly.
  - Appropriate steps shall be taken to ensure safe handling of petroleum products or other chemical pollutants.

b. Water Circulation, Fluctuation, and Salinity Determinations

- 1) Water – No change in water quality is expected due to this action.
  - a) Salinity – N/A
  - b) Water Chemistry – Water chemistry of the project area would not be expected to change as a result of the excavation or placement of earthen material and/or rip-rap.
  - c) Clarity – There would be temporary increases in turbidity during fill placement. Turbidity within the project area would be expected to return to pre-construction levels shortly after construction is completed.
  - d) Color – No expected change.
  - e) Odor – No expected change.
  - f) Taste – No expected change.
  - g) Dissolved Gas Levels – No expected change.
  - h) Nutrients – No expected change.
  - i) Eutrophication – No expected change.
  - j) Others as Appropriate – No expected change.
- 2) Current Patterns and Circulation
  - a) Current Patterns and Flow – Current patterns and flow would not be expected to change.
  - b) Velocity – Water velocity is not expected to change.
  - c) Stratification – No expected change.
  - d) Hydrologic Regime – No changes to the hydrologic regime of St. Johns Bayou Outlet Ditch would be anticipated as hydrology is dependent on rainfall within the St. Johns Bayou Basin and backwater from the adjacent Mississippi River. However, stabilization of the channel and banks downstream of the outlet structure and upstream of the confluence with Mud Ditch would prevent further scour and potential seepage landside of the MRL.
- 3) Normal Water Level Fluctuations – Existing local rainfall amounts, including operation of the outlet structure, as well as Mississippi River water levels are anticipated to remain similar in future conditions. Therefore, water level fluctuations would not be expected to change.

- 4) Salinity Gradients – N/A
- 5) Actions Taken to Minimize Impacts – Actions that would be implemented during construction to minimize impacts have been previously described in the Physical Substrate Determinations section above.

c. Suspended Particulate/Turbidity Determinations

- 1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site – Minor increases in suspended particulates and turbidity levels are expected during construction. Best management practices would be used throughout the construction process to minimize the impact. Ambient conditions are expected to return shortly after completion of construction.
- 2) Effects on Chemical and Physical Properties of the Water Column
  - a) Light Penetration – Minor impacts are expected to light penetration due to an expected increase in turbidity levels during construction. Ambient conditions are expected to return shortly after completion of construction.
  - b) Dissolved Oxygen – No change is expected due to water depth and currents.
  - c) Toxic Metals and Organics – No effect on toxic metals and organics are expected.
  - d) Pathogens – N/A
  - e) Aesthetics – Aesthetics would be temporarily impacted during construction due to the presence of construction equipment.
  - f) Others as Appropriate – None noted.
- 3) Effects on Biota
  - a) Primary Production – Project activities would have a temporary and minimal effect on project area primary production during construction. Existing conditions are expected to return shortly after completion of construction.
  - b) Suspension/Filter Feeders – Increased turbidity during construction to adjacent areas would be minimal and of short duration with the implementation of best management practices and proposed construction in high water/flow periods.
  - c) Sight Feeders – Not applicable.
  - d) Actions Taken to Minimize Impacts – Actions that would be implemented during construction to minimize impacts have been previously described in the Physical Substrate Determinations section above.

d. Contamination Determinations

It is not expected that any contaminants would be introduced or translocated due to construction. A hazardous, toxic, and radioactive waste survey has been conducted on the area. No potential sources of contamination were found.

e. Aquatic Ecosystem and Organism Determinations

- 1) Effects on Plankton – Planktonic organisms may be temporarily disturbed during construction, as increases in turbidity are expected. However, turbidity levels would be expected to return to pre-construction levels shortly after construction is completed. Therefore, there would be no significant impacts to plankton.
- 2) Effects on Benthos – Benthic organisms may be disturbed with the turbidity increase, but no more than what would naturally occur during high flow events.
- 3) Effects on Nekton – Nekton would be temporarily displaced during construction, but would return shortly after project completion.
- 4) Effects on Aquatic Food Web – Temporary reductions in benthic and suspension/filter communities in such a small area should not significantly impact the aquatic food web during construction. These organisms would quickly colonize the area after construction.
- 5) Effects on Special Aquatic Sites
  - a) Sanctuaries and Refuges – N/A
  - b) Wetlands – No significant impacts to wetlands would be expected with implementation of the proposed action. The proposed spoil location, adjacent to the St. Johns Bayou Outlet Ditch and Mud Ditch, was previously used as borrow site for the New Madrid Floodway closure levee and is currently subject to routine disturbance (e.g., brush hog) and/or agricultural production with few scattered trees along the western boundary (Figure 2).
  - c) Mud Flats – N/A
  - d) Vegetated Shallows – N/A
  - e) Coral Reefs – N/A
  - f) Riffle and Pool Complexes – N/A
- 6) Threatened and Endangered Species – Pursuant to Section 7 of the Endangered Species Act, as amended, USACE has determined that the proposed action associated with the Phase 1 project area would have no effect on the gray bat, Indiana bat, northern long eared bat, tricolored bat, alligator snapping turtle, or the pallid sturgeon. Additionally, no evidence of bald eagles, or their nests, were

observed at the location. The bald eagle is no longer listed as a threatened species, but is still protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act.

- 7) Other Wildlife – Terrestrial wildlife would be minimally impacted by temporary displacement during project construction.
- 8) Actions Taken to Minimize Impacts – Actions that would be implemented during construction to minimize impacts have been previously described in the Physical Substrate Determinations section above.

f. Proposed Disposal Site Determinations

- 1) Mixing Zone Determinations – N/A
- 2) Determination of Compliance with Applicable Water Quality Standards – USACE, MVM, has requested water quality certification from the State of Missouri, Department of Natural Resources, with the draft environmental assessment and the Joint Public Notice.
- 3) Potential Effects on Human Use Characteristic
  - a) Municipal and Private Water Supply – N/A
  - b) Recreational and Commercial Fisheries – N/A
  - c) Water Related Recreation – N/A
  - d) Aesthetics – Aesthetics would be temporarily impacted during construction due to the presence of construction equipment.
  - e) Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves – N/A

g. Determination of Cumulative Effects on the Aquatic Ecosystem

Impacts associated with proposed project activities would not have any significant adverse cumulative effects on the environment or aquatic ecosystem.

h. Determination of Secondary Effects on the Aquatic Ecosystem

Not Applicable.



### III. Findings of Compliance for MRL Seepage Control Measures

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

A draft environmental assessment has been completed that addresses channel and stabilization methods compared to traditional rip-rap material. As the project footprint for all proposed methods remained constant, considering cost of implementation, rip-rap was determined to be the most efficient solution to resist determined velocities and erosion forces.

b. Compliance with Applicable State Water Quality Standards

Application for State of Missouri water quality certification has occurred with the draft environmental assessment and the Joint Public Notice. A determination concerning water quality certification has not been made to date. Those making comments to this 404(b)(1) evaluation are asked to furnish a copy of their comments to the Missouri Department of Natural Resources.

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

New Madrid County is in attainment for all air quality standards. No significant impacts to air quality are expected. Additionally, best management practices would be used throughout the construction to minimize air pollution.

d. Compliance with Endangered Species Act of 1973

No impacts are expected to federally listed or proposed threatened or endangered species. This project has been coordinated with the Department of Interior, U.S. Fish and Wildlife Service.

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

Not applicable.

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

1) Significant Adverse Effects on Human Health and Welfare

- a) Municipal and Private Water Supplies – N/A
- b) Recreation and Commercial Fisheries – N/A
- c) Plankton – No significant impacts are expected.
- d) Fish – No significant impacts are expected.

- e) Shellfish – N/A
- f) Wildlife – No significant impacts are expected.
- g) Special Aquatic Sites – N/A
- 2) Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems – No significant impacts are expected.
- 3) Significant Adverse Effects on Aquatic Ecosystem Diversity, Productivity, and Stability – No significant impacts are expected.
- 4) Significant Adverse Effects on Recreational, Aesthetic, and Economic Values – No significant impacts are expected.
- g. Appropriate and Practical Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem

Actions that would be implemented during construction to minimize impacts have been previously described in the Physical Substrate Determinations section above. Chiefly, best management practices would be implemented, construction would occur during high-flow periods, and impact areas would be limited to the extent necessary for construction.

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

☐ Specified as complying with the requirements of these guidelines; or,

☒ Specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem; or,

**All conditions from the Missouri Department of Natural Resources would be adhered to.**

☐ Specified as failing to comply with the requirements of these guidelines.

\_\_\_\_\_  
Date

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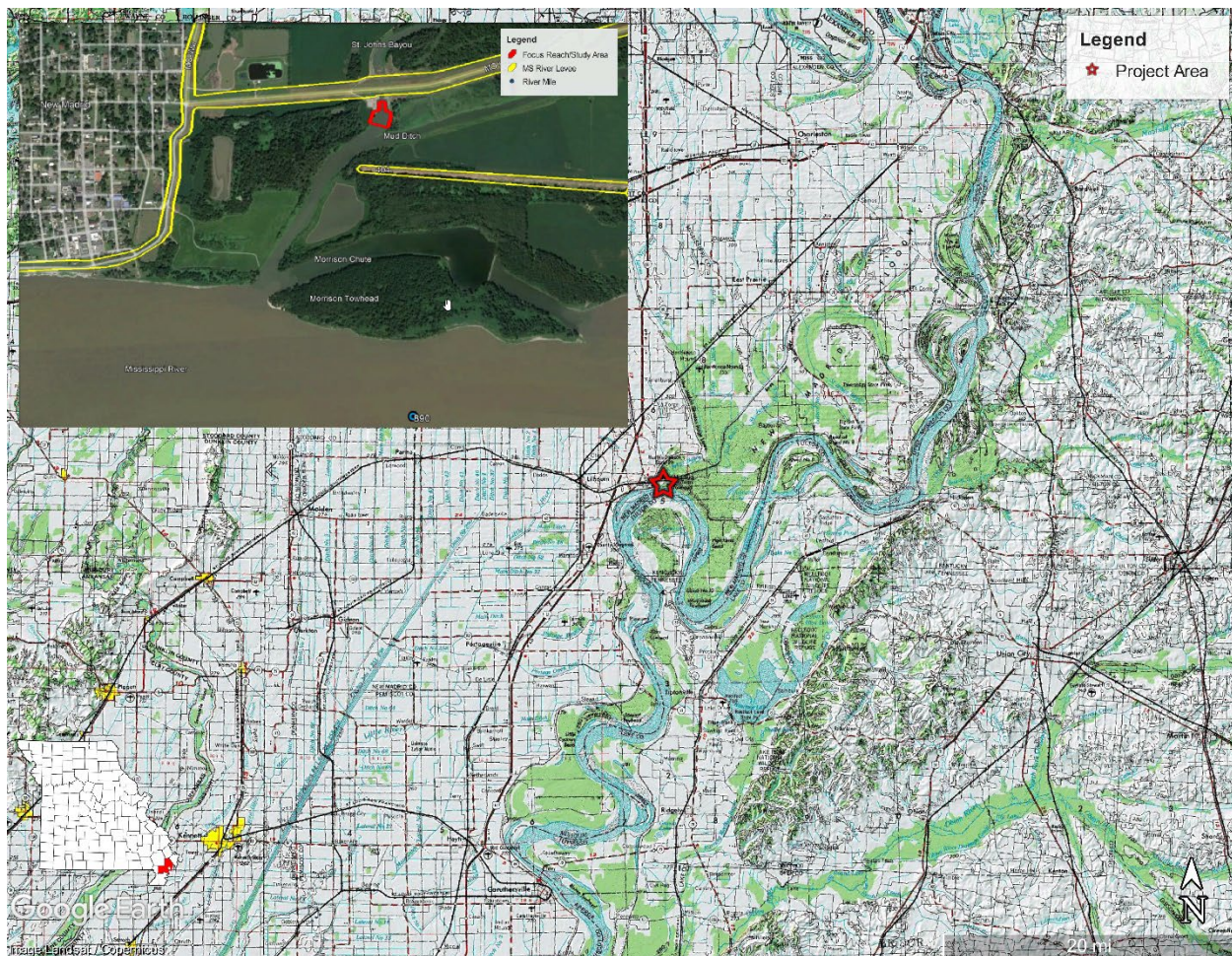


Figure 1. Location of proposed scour repair measures at St. Johns Outlet Ditch, adjacent to the Mississippi River mainline levee (see insert), New Madrid County, Missouri.



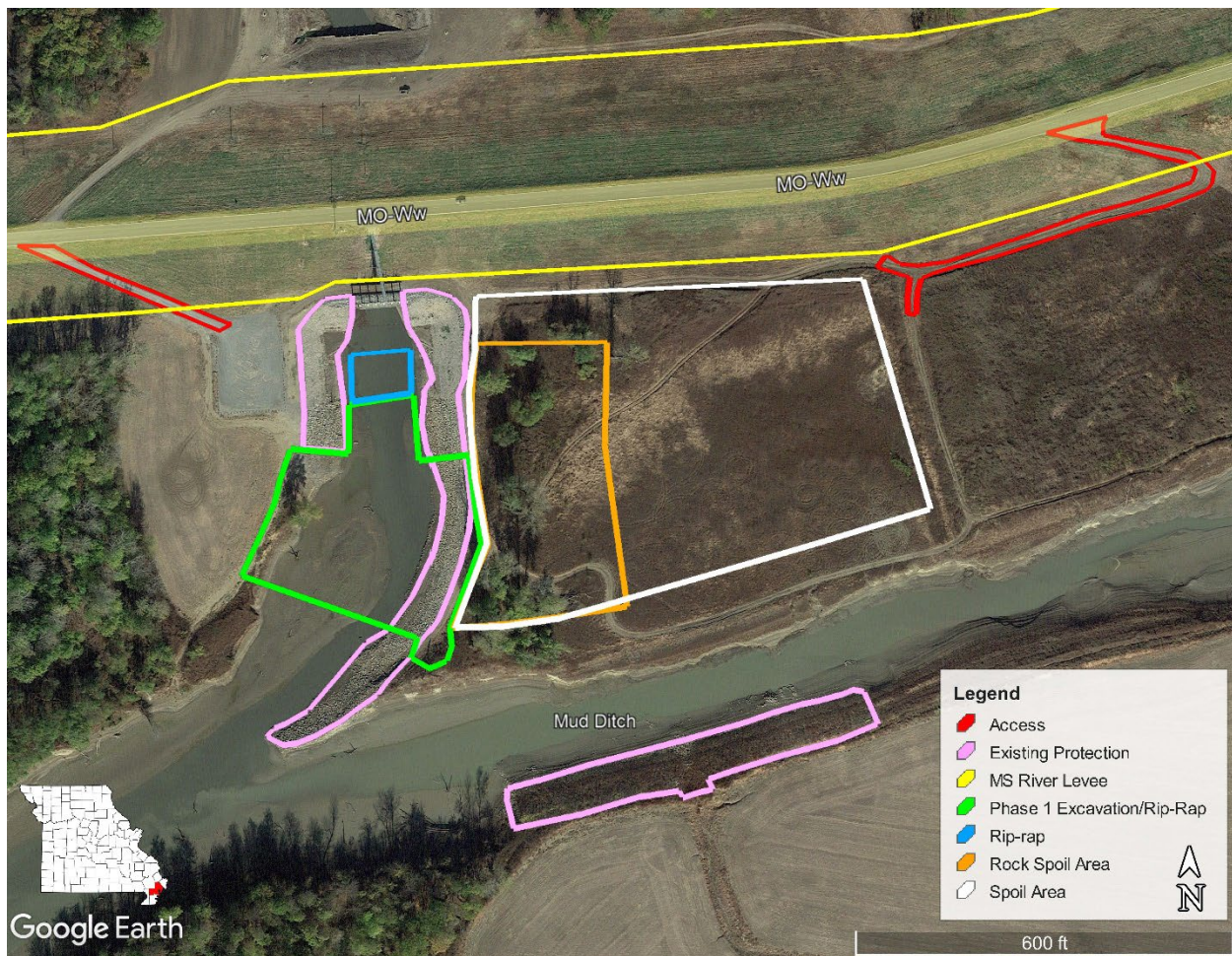


Figure 2. Location of proposed St. Johns Bayou Outlet Ditch scour repair project (Phase 1), New Madrid County, Missouri.





Figure 3. Existing condition of the St. Johns Bayou Outlet Ditch Repair Project (Phase 1) area channel and banks, New Madrid County, Missouri.



Figure 4. Existing project area scour conditions (left) and left descending bank (right), St. Johns Bayou Outlet Ditch Repair Project (Phase 1), New Madrid County, Missouri.