

DRAFT 404(b)(1) EVALUATION
St. Francis Basin Maintenance
St. Francis River Basin – Big Slough Scour Repairs
Clay County, AR

I. Project Description

a. Location

The proposed scour repair measures include five designated scour sites over a 12-mile reach along Big Slough Ditch, which is part of the St. Francis River system. The proposed action is in the vicinity of levee baseline station 1040+00 – 440+00, located near the town of Rector in Clay County, Arkansas (Figure 1).

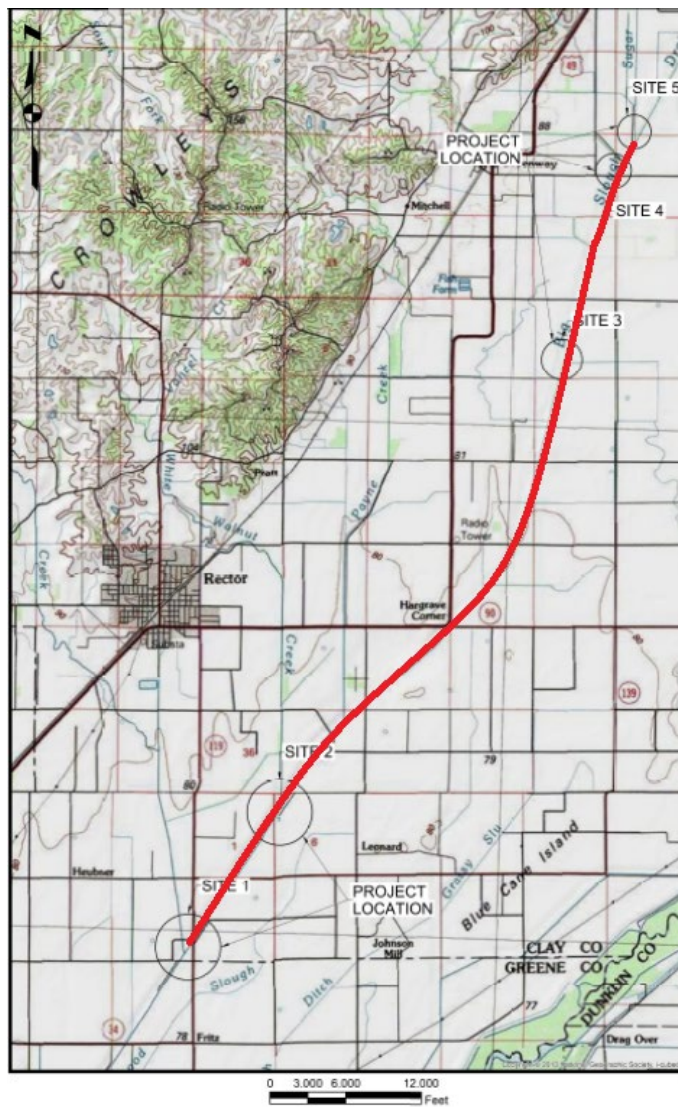


Figure 1. Location of Proposed Scour Repairs in Big Slough Ditch, Clay County, AR.

b. General Description

The purpose of this project is to reduce flood risk, flood damages, and flood protection costs resulting from flood events on Big Slough Ditch, in Clay County AR. The proposed maintenance work consists of restoring authorized design bottom grades, stabilizing slopes, and preventing further scouring at five sites over a 12-mile reach of Big Slough Ditch. Each scour site would be restored to original design grade slopes and bottom widths. R-200 riprap and bedding material would be used to armor the slopes, and in the case of sites 2 and 3, the entire channel width would be armored. Starting at the southernmost site, Site 1, where State Highway (HWY) 139 crosses Big Slough, there is a power line pole that is at risk of being compromised due to bank erosion on the upstream side of HWY 139 Bridge. Sites 2 – 5 are experiencing bank scour where the inflow of a tributary is causing erosion on the opposite bank due to high velocities. Each of the five scour sites has been individually assessed and would be repaired based on those needs. Scour lengths, estimated riprap quantities, and excavation amounts are listed in Table 1.

Table 1. Proposed R-200 and bedding material quantities and scour lengths.

Scour Site	~ Length of Repair (Ft)	R-200 Quantity Estimated (Tons)	Bedding Material (Tons)	Silt Fence (ft)	~ Repair Section Excavation (cubic yard)
1	1,701	7,933	2,692	1,285	7,515
2	2,206	9,567	2,746	1,395	7,673
3	1,998	6,583	2,032	970	6,078
4	1,799	3,763	980	565	3,191
5	1,399	3,650	1,468	525	1,667

Construction work would be conducted from one side of the bank. Slopes ranging from 2H:1V to 3H:1V would be created by the R-200 riprap. The bottom width of the channel would be excavated and restored to original design specifications, which ranges from 25' to 55' (Figure 2). The excavated material would be stored on site within the right-of-way. The spoil piles would be 10 feet offset from the top of the channel, and the slopes of the spoil pile would be no steeper than 2H:1V. No wetlands would be filled or otherwise affected. Minimal woody vegetation would be cleared on the banks.

Access to the project areas would be from county roads, farms roads, and HWY 139. It is anticipated that no utilities would be disturbed as part of the proposed work.

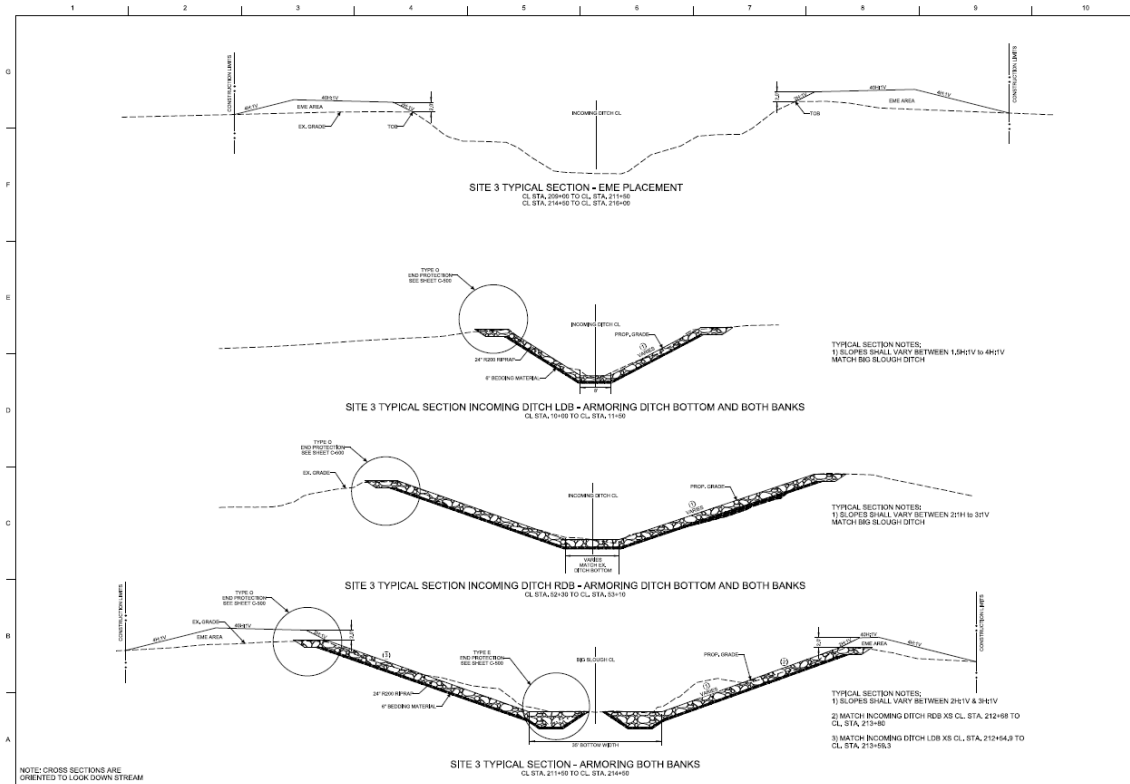


Figure 2. Typical proposed repair section for scours in Big Slough Ditch, Clay County, AR.

c. Authority and Purpose

The proposed action is authorized as part of the Flood Control Act of 15 May 1928 as amended. This Act provided for the construction, enlargement, and strengthening of the levees of the St. Francis Basin Project to safely pass the floodwaters of the St. Francis River and its tributaries. The purpose of this project is to reduce flood risk, flood damages, and flood protection costs resulting from flood events on Big Slough Ditch.

d. General Description of Dredged or Fill Material

1) General Characteristics of Material

Riprap – Only R-200 riprap would be used for the scour locations. In addition to the riprap, silt fencing and bedding would also be placed at each scour site.

Excavated Material – Any excavated material from construction would be stored along top bank as spoil. The spoil piles would be 10 feet offset from the top of the channel, and the slopes of the spoil pile would be no steeper than 2H:1V.

2) Quantity of Material

Riprap – Approximately 31,026 tons of R-200 riprap would be needed in total for the five scour repair locations.

Bedding- Approximately 9,919 tons of bedding material would be needed in total for the five scour repair locations.

Silt Fence material- Approximately 4,740 feet of fencing material would be needed in total for the five scour repair locations.

Excavated material – A total of approximately of 26,124 cubic yards are expected to be excavated.

3) Source of Material – The riprap, bedding materials, and associated silt fencing and other site protection measures would be provided from commercial sources.

e. Description of the Proposed Discharge Site(s)

1) Location – The five scour repair locations are in Big Slough Ditch (in the vicinity of levee baseline station 1040+00 – 440+00) located near the town of Rector, Clay County, AR.

2) Size – Big Slough Ditch provides drainage and flood control from just southeast of Piggott and spans approximately 28 miles before it eventually meets up and flows into the St. Francis River near Giles Island in Greene County, AR. Big Slough Ditch drains a watershed approximately 302 square miles in size.

3) Type(s) of Habitat – Available in-stream habitat is sparse throughout the project area as there are few trees along the channelized ditch to provide any allochthonous input. The stream sediment load consists of shifty sands and very little stable habitat. The immediate riparian zone is dominated by grasses and weed species with no trees or shrubs. Outside the immediate vicinity of the ditch, the surrounding vegetation consists of agricultural production or is used in cattle farming.

4) Timing and Duration of Discharge – Construction is scheduled to commence in the immediate future. Construction would take place as soon as possible, but every effort would be made to construct during periods of low water and dry conditions. Best management practices would be applied.

f. Description of Disposal Method

Minimal vegetation would be cleared along the banks to allow for equipment access. Excavation of the channel bottom would be necessary to create the suitable slope and drainage flows required during key construction.

II. Factual Determinations

a. Physical Substrate Determinations

- 1) Substrate Elevation and Slope – Slopes ranging from 2H:1V to 3H:1V would be created by the R-200 at the scour locations. The re-established bottom width of the channel would vary from 25' to 55' depending on the scour site being addressed. Excavated material would be stored on site. The spoil piles would be 10 feet offset from the top of the channel, and the slopes of the spoil pile would be no steeper than 2H:1V.
- 2) Sediment Type – The majority of the proposed Below Piggott project is composed of either Sharkey-Dundee-Amagon, Sharkey-Dundee -Dubbs-Bosket, or Henry-Grenada-Calloway-Calhoun soil series. These soils are somewhat poorly drained and occur mostly as narrow strips that parallel levees where soil material has been excavated for use in constructing the levee.
- 3) Dredged/Fill Material Movement – Material would be excavated from the channel bottom to restore original channel width. This material would be stored as spoil piles on site.
- 4) Physical Effects on Benthos – Excavation of sediment would have a minimal impact on benthos. Benthic communities would return to pre-existing conditions shortly after project completion.
- 5) Other Effects – not applicable.
- 6) Actions Taken to Minimize Impacts - The following actions would be implemented during construction to minimize impacts:
 - The recommended plan is the least environmentally damaging plan that is economically feasible.
 - Effective erosion control would be in place prior to construction and maintained throughout the construction period.
 - Construction would take place during periods of low rainfall and low water stages if possible.
 - Discharge material would be clean and free of pollutants, contaminants, toxic materials, hazardous substances, waste metal, construction debris and trash, and other wastes.
 - Vegetation to be cleared would be the minimum necessary to allow for construction access.
 - Heavy equipment shall be kept out of free-flowing water.

- Construction debris would be kept from entering the ditch channel and shall be disposed of properly.
- Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering the water.

b. Water Circulation, Fluctuation, and Salinity Determinations

- 1) Water. No change in water quality is expected due to this project.
 - a) Salinity – not applicable.
 - b) Water Chemistry – There would be no significant effects on water chemistry.
 - c) Clarity – There would be limited disturbances to water clarity during construction due to minor increases in suspended particulates and turbidity levels. Water clarity is expected to return to pre-construction levels shortly after construction is completed.
 - d) Color – Water color is not expected to change significantly.
 - e) Odor – Odor of the water is not expected to change significantly.
 - f) Taste – The taste of the water is not expected to change significantly.
 - g) Dissolved Gas Levels – Dissolved gas levels are not expected to change significantly.
 - h) Nutrients – Nutrients are not expected to change significantly.
 - i) Eutrophication – No significant changes to eutrophication rates are expected from the discharge.
 - j) Others - not applicable.
- 2) Current Patterns and Circulation
 - a) Current Patterns and Flow – Current patterns and flows are not expected to be altered post-project.
 - b) Velocity – Water velocity is not expected to be affected. Average and low-flow conditions would not be affected.
 - c) Stratification – No significant changes to stratification are expected from project construction.
 - d) Hydrologic Regime – No significant changes to the hydraulic regime are expected as original design specifications are to be restored.

- 3) Normal Water Level Fluctuations – The existing water levels in the ditches are determined by rainfall and channel capacity. The ditch would be enlarged to restore it to its original design. Water level fluctuations would remain the same.
- 4) Salinity Gradients – not applicable.

Actions Taken to Minimize Impacts – Actions that would be implemented during construction to minimize impacts have been previously described in the Factual 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 the shallow water depth and currents.
 - c) Toxic Metals and Organics – No effect on toxic metals and organics are expected.
 - d) Pathogens – not applicable.

Aesthetics – Aesthetics would be temporarily impacted during construction due to the presence of construction equipment. Minimal woody vegetation would be cleared within the project areas.

- e) Others as Appropriate – None noted.

3) Effects on Biota

- a) Primary Production – Aquatic vegetation is limited within the existing ditch. The proposed work should have little effect on primary production after the banks revegetate.
- b) Suspension/Filter Feeders – Increased turbidity would be of short duration, and any organisms that are impacted should repopulate the area after project completion.

- c) Sight Feeders – Resident fish are adapted to turbidity increases that occur after every rainstorm. Project-related turbidity increases would be minor compared to these natural events. Since fish and other sight feeder are highly mobile, project impacts to sight-feeding organisms would be insignificant and short term.
 - d) Actions taken to Minimize Impacts – Actions that would be implemented during construction to minimize impacts have been previously described in the Factual Determinations section above.
 - d. Contaminant 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. The discharge material would be clean and free of pollution. No testing of the discharge material is warranted.
 - e. Aquatic Ecosystem and Organism Determinations
 - 1) Effects on Plankton – Effects, if any, on plankton communities are expected to be insignificant and of short duration.
 - 2) Effects on Benthos – Benthic organisms may experience a short-term disturbance due to turbidity increase and channel shaping actions but would quickly return to normal after construction.
 - 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 recolonize the area after construction.
 - 5) Effects on Special Aquatic Sites
 - a) Sanctuaries and Refuges – not applicable.
 - b) Wetlands – No wetlands exist within the project area.
 - c) Mud Flats – not applicable.
 - d) Vegetated Shallows – not applicable.
 - e) Coral Reefs – not applicable.
 - f) Riffle and Pool Complexes – not applicable.

- 6) Threatened and Endangered Species – The threatened Eastern Black Rail, Piping Plover, and Red Knot would potentially utilize the vegetative areas within the project areas. Site habitat assessments of the proposed project areas occurred during the fall of 2019. As the areas surrounding the project vicinity are heavily farmed, results of the site assessment concluded that no evidence of suitable habitat was present within the project location. Additionally, no evidence of bald eagles, or their nests, was observed at any project location. No federally threatened or endangered aquatic organisms, including freshwater mussels have been collected or observed in the Big Slough Ditch project vicinity. Therefore, USACE has determined that the proposed project would have no effect on any threatened or endangered species nor their critical habitats. The U.S. Fish and Wildlife Service concurred with a may affect, but not likely to adversely affect determination regarding federally listed threatened or endangered species on February 25, 2021.
- 7) Other Wildlife – Terrestrial wildlife would be minimally impacted during construction activities but should return to pre-construction levels after construction is completed.
- 8) Actions Taken to Minimize Impacts – Actions that would be implemented during construction to minimize impacts have been previously described in the Factual Determinations section above, chiefly construction would occur in low-flow periods and impact areas would be limited to the extent necessary for construction.

f. Proposed Disposal Site Determinations

- 1) Mixing Zone Determinations – not applicable.
- 2) Determination of Compliance with Applicable Water Quality Standards – A state water quality certification is being requested from the State of Arkansas, Department of Environmental Quality as part of this application process.
- 3) Potential Effects on Human Use Characteristic
 - a) Municipal and Private Water Supply – not applicable.
 - b) Recreational and Commercial Fisheries – not applicable.
 - c) Water Related Recreation – not applicable.
 - d) Aesthetics – Any construction activities would have minimal impacts to the aesthetics of the area.
 - e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves – not applicable.

- g. Determination of Cumulative Effects on the Aquatic Ecosystem – With the stabilization of the ditch banks, scouring would be reduced and could potentially reduce the amount of sediment entering the system. By armoring the banks, the integrity of the adjacent levee would be ensured.
- h. Determination of Secondary Effects on the Aquatic Ecosystem – not applicable.

III. Findings of Compliance for Scour Control Measures

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

The original EIS and amendments direct that the completed projects are to be maintained to ensure the designed degree of protection. Without installation of scour control measures, the integrity of Big Slough Ditch would be compromised.

- b. Compliance with Applicable State Water Quality Standards

Application for State of Arkansas water quality certification is being requested as part of the 404 analysis. 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 Arkansas Department of Environmental Quality.

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

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

- 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 – not applicable.

- b) Recreation and Commercial Fisheries – No significant impacts are expected.
 - c) Plankton – No significant impacts are expected.
 - d) Fish – No significant impacts are expected.
 - e) Shellfish – not applicable.
 - f) Wildlife – No significant impacts are expected.
 - g) Special Aquatic Sites – not applicable.
- 2) Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems
- No significant impacts are expected.
- 3) Significant Adverse Effects on Aquatic Ecosystem Diversity, Productivity, and Stability
- No significant impacts are expected.
- 4) Significant Adverse Effects on Recreational, Aesthetic, and Economic Values
- No significant impacts are expected. Minimal clearing of woody vegetation would occur. Construction activities would have minimal impacts to the aesthetics of the area. Vegetation would regenerate following construction.
- 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 Factual Determinations section above, chiefly best management practices would be implemented, construction would occur during low-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:
- 1) Specified as complying with the requirements of these guidelines; or,
 - 2) Specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem; or,

All conditions from the Arkansas Department of Environmental Quality would be adhered to.

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

March 04, 2021
Date


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