

Appendix G
Cost Estimate

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UPPER MISSISSIPPI RIVER RESTORATION SYSTEM
FEASIBILITY REPORT
WITH INTEGRATED ENVIRONMENTAL ASSESSMENT

HARLOW ISLAND HABITAT REHABILITATION
AND ENHANCEMENT PROJECT

MIDDLE MISSISSIPPI RIVER MILES 140.5 THROUGH 144
JEFFERSON COUNTY, MISSOURI

**APPENDIX G
COST ESTIMATE**

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Cost Appendix G

1 GENERAL

The Harlow Island Habitat Rehabilitation and Enhancement Project is located on the right descending bank of the Mississippi River between river miles 140.5 and 144, approximately 35 miles south of St. Louis, in Jefferson County, Missouri. The Project Area is comprised of 1,224 acres of aquatic backwater, floodplain forest, and wetland habitat.

The goal of the Project is to restore and improve the quality and diversity of aquatic backwater, floodplain forest, and wetland ecosystem resources within the Project Area. The team reviewed the individual restoration features to determine what measures or variations of features would be carried forward.

The following objectives were considered in detail to achieve the project goal:

- Restore topographic diversity in the Project Area.
- Increase connected aquatic backwater habitat with depth diversity for enhanced fisheries habitat benefits.
- Increase fine soil deposition within project area suitable for hard mast forest.
- Restore floodplain forest communities.

The Tentatively Selected Plan, for the Harlow Island HREP consists of multiple measures to restore and improve the aquatic ecosystem structure and function by implementation of the following restoration measures:

- Sediment deflection berm
- Increase backwater depth and bathymetric diversity
- Reforestation throughout the study area
- Ridge construction and swale excavation

Implementation of the TSP would increase the quality and quantity of ecosystem resources and meet the needs for a large variety of native aquatic species. Restoring flow and connectivity of the backwater area to the main channel of Mississippi River would contribute to overwintering fish habitat as well as feeding areas for migratory wildlife. This would also provide bathymetric diversity within the backwater area which would provide important slack-water habitat within the MMR. Floodplain forest and wetland habitat restoration would create vital missing habitat for fish and wildlife for the Project Area and the Middle Mississippi River. The Project outputs are also consistent with the goals and objectives of the Upper Mississippi River Restoration Program.

All Project measures would be located within the lands and waters of the United States, which are under federal ownership by the USFWS; responsibility for the operation, maintenance, rehabilitation, replacement, and repair (OMRR&R) of the Project would be the responsibility of USFWS. As a result, funding for restoration features would be 100 percent Federal.

2 BASIS OF COST ESTIMATE

The cost estimate has been prepared based on current concept designs and specific site information available to date. Topographic surveys of the project area were conducted in 2015. The survey was completed using aerial Light Detection and Ranging (LiDar) equipment by a third party contractor with a specified confidence level of 95%. Pricing data was developed from recent contract estimates for similar projects in the St. Louis Area. It has been determined that there is no significant sea level rise that would impact the cost of the project. (Reference H&H Appendix Section 5 for Climate Change Info.) This estimate will be considered the basis for the Current Working Estimate and includes all phases of project construction.

3 CONSTRUCTION

Project construction will likely consist of multiple contracts for several phases to coincide with Work-Plan funding for FY allocated funding streams. Work could possibly be divided into reaches.

The final array of measures incorporated into the Harlow Island Feasibility-Level design include the construction of a Sediment Deflection (SD) Berm, Backwater Channel, Ridges, and Swales.

The Sediment Deflection Berm will be constructed with semi-compacted embankment that will be left open at the lowest end, allowing floodwater to enter the bermed area at a low velocity thus depositing sediment behind the berm.

The existing levee will be degraded at two points at the north end of the island to improve the hydraulic performance of the reinforced sediment deflection system. After clearing and stripping of these features, the material excavated from the levee to be removed will be utilized in constructing the SD Berm. The remaining Ridges and portions of the SD Berm will be constructed of material excavated from swales.

Harlow Island consists of an area that was once a Backwater Channel. The upper portion of the Backwater Channel will be mechanically excavated along with any dike structures to be removed. The excavated material will be used to construct berms on the interior of the existing levee, forming the perimeter(s) of the lowest two proposed ridges and sediment deflection berm that will be used to contain and dewater dredged material. Additional excavated material may be stockpiled for use in capping the SD Berm and Ridges, or used to construct other portions of the SD Berm, depending on the final contract sequence. The remaining portion of the Backwater Channel which is assumed to be primarily sands, will be hydraulically dredged. The dredged material will be placed as the core for the two adjacent ridges and portion of the SD Berm. The core will be capped with semi-compacted fill.

After completion of the Backwater Channel Dredging a stone grade control structure will be constructed at the upstream end of the backwater channel excavation to control erosion and an additional stone grade control structure will be constructed near the confluence to control the channel outlet width, depth and angle. Additional stone grade control structures are assumed to be constructed upstream of the channel with land based equipment.

Final Grading and all plantings required for reforestation are assumed to be done at the end of project construction.

4 CONTINGENCIES

Risk analyses processes indicate an approximate 27% contingency based on associated project risks.

5 PLANNING, ENGINEERING, AND DESIGN (PED)

Planning, engineering and design costs are based on historical data of similar projects in the St. Louis District. Recommended percentages by the cost MCX were taken into consideration as well.

6 CONSTRUCTION MANAGEMENT

Construction Management costs are based on historical data of similar projects in the St. Louis District. Recommended percentages by the cost MCX were taken into consideration as well.