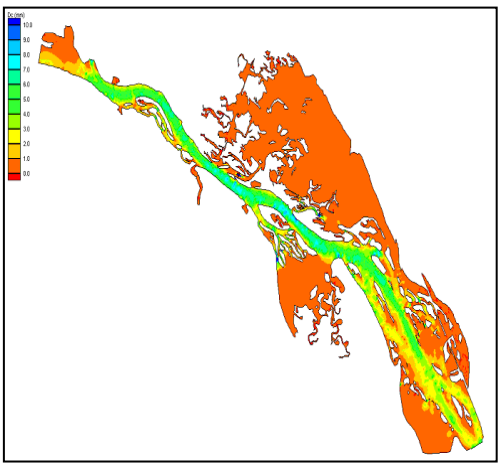
2-D Hydrodynamic Modeling of Pool 3 and Lower Pool 4 Upper Mississippi River

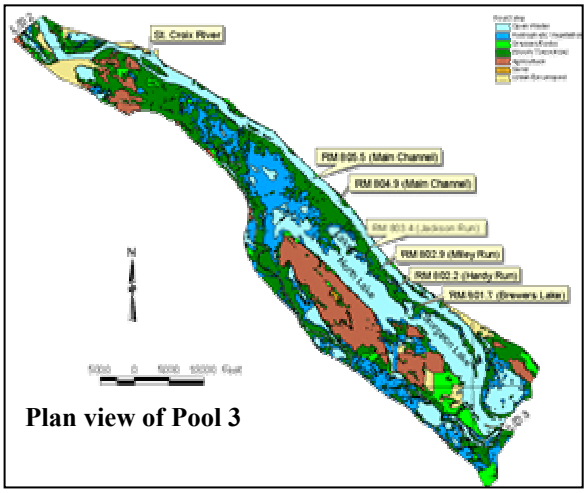
Pool 3 (River Miles 796.9 to 815.2) and Lower Pool 4 (River Mile 752.7 to 764) of the Mississippi River requires annual dredging to maintain a navigable channel. At several locations in this reach, navigation conditions are poor, due to the channel configuration. This reach provides excellent fish and wildlife habitat, although opportunities exist to improve habitat quality in several areas, and there are numerous recreational opportunities. WEST Consultants, Inc. performed a two-dimensional numerical modeling study to identify river modifications that would optimize navigation channel maintenance, improve fish and wildlife habitat, and enhance recreational opportunities.



Critical diameter size (mm) for high flow conditions for Lower Pool 4 Upper Mississippi River

The work performed for the U.S. Army Corps of Engineers, St. Paul District, consisted of developing a two-dimensional hydrodynamic model (RMA-2) of the existing conditions in Pool 3, from Lock and Dam 2 (L&D2) to Lock and Dam 3 (L&D3), and in Pool 4, from Chippewa River to Lock and Dam 4 (L&D4). The District, in consultation with natural resource agencies, developed three preliminary design alternatives to be simulated using the two-dimensional hydrodynamic model. Each alternative could contain several river modifications, assuming that river modifications made in one sub reach do not affect conditions in other areas of the Pools. This allowed one model simulation to evaluate up to three river modifications considered for the Pools. District staff then examined output from the three preliminary alternatives, and one final alternative was developed and simulated with the model. The work performed had the following elements:

- Develop a two-dimensional hydrodynamic model of Pool 3 and Pool 4 for existing conditions.
- Calibrate and verify the model to measured data using reasonable ranges of parameters
- Compare model results with discharge rating curves provided by the District
- Simulate three river discharges (10,000, 30,000, and 45,000 cfs)
- Simulate three preliminary and on final alternative



Plan view of Pool 3

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