

1 Introduction

Background

The Upper Mississippi River-Illinois Waterway System (UMR-IWWS) Navigation Study evaluates the justification of providing additional lockage capacity at sites on the UMR-IWWS while maintaining the social and environmental qualities of the river system. The system navigation study is implemented by the Initial Project Management Plan (IPMP) outlined in U.S. Army Corps of Engineers (1994). The IPMP outlines engineering, economic, environmental, and public involvement plans.

The environmental plan identifies the following: significant environmental resources on the UMR-IWWS; impacts to threatened and endangered species; water quality; recreational resources; fisheries; mussels and other macroinvertebrates; waterfowl; aquatic and terrestrial macrophytes; and historic properties. The plan considers the system-wide impacts of navigation capacity increases, while assessing potential construction effects of improvement projects. The physical forces studies are part of the environmental plan.

Physical Force Objectives

According to the IPMP, the objectives of the physical forces studies are as follows:

- a.* Use Illinois State Water Survey (ISWS) field data to calibrate and validate the physical model.
- b.* Increase density of measurements to refine their spatial distribution.
- c.* Make a range of measurements which could not be made in the field.
- d.* Expand measurements to different cross sections.
- e.* Carry out statistical data analyses.

- f.* Develop models by combining existing field data with new data developed from the physical model.
- g.* Evaluate the feasibility of developing numerical solutions.

Scope of Report

The Clark's Ferry site was one of two sites used in the physical model to achieve the physical force objectives outlined above. The first experimental site was at Kampsville on the Illinois River and is referenced in this report. Specifically, the Clark's Ferry site study evaluated the far field velocities and drawdown induced by underway tows. Far field refers to all areas except those beneath and immediately adjacent to the tow. The Clark's Ferry study provides physical force data and an understanding for developing analytical models.