

**ENV Report 41 – *Tow-Induced Backwater and Secondary Channel Sedimentation, Upper Mississippi River System*** by Thomas J. Pokrefke, Jr., R. Charlie Berger, Joon P. Rhee, Stephen T. Maynard.

**ABSTRACT**

The work reported herein was conducted as part of the Upper Mississippi River – Illinois Waterway (UMR-IWW) System Navigation Study. The information generated for this interim effort will be considered as part of the plan formulation process for the System Navigation Study.

The UMR-IWW System Navigation Study is being conducted by the U.S. Army Engineer Districts, Rock Island, St. Louis, and St. Paul, under the authority of Section 216 of the Flood Control Act of 1970. Commercial navigation traffic is increasing and, in consideration of existing system lock constraints, will result in traffic delays that will continue to grow into the future. The System Navigation Study scope is to examine the feasibility of navigation improvements to the Upper Mississippi River and Illinois Waterway to reduce delays to commercial navigation traffic. The study will determine the location and appropriate sequencing of potential navigation improvements on the system, prioritizing the improvements for the 50-year planning horizon from the year 2000 to 2050. The final product of the System Navigation Study is a Feasibility Report, including the decision documents for processing to Congress.

One of the concerns possibly associated with potential improvement plans is the determination of sediments introduced to backwaters and secondary channels from towboat navigation. Specifically, the volume of sediments entering backwaters and secondary channels in Mississippi River trend pools (Pools 4, 8, 13, and 26), in the open-river trend reach (River Miles 31 to 74), and in the LaGrange Pool on the Illinois Waterway needed to be quantified. After that was accomplished, linkages were to be developed to take the quantified impacts from the trend pools (reach) where significant data are available to the non-trend pools where data were less intensive. These linkages provide extrapolated impacts to the non-trend pools and information to be used to evaluate system impacts and potential mitigation guidance where necessary. The part of the study reported herein determined only how much sediment is delivered to the backwaters and secondary channels of the specified inlets, and computations and resulting sedimentation quantities are the result only of towboat navigation resuspending the channel bed material. As this study effort progressed, it was determined that computing the delivery rates and potential for impacts for base and alternative conditions provided a logical approach for use in addressing backwater and secondary channel sedimentation trends as a result of towboat navigation.