ENV Report 9 - ***Identification of Potential Commercial Navigation Related Bank Erosion Sites*** by Kevin Landwehr and Tatsuaki Nakato

ABSTRACT

Contingency analyses using discrete field bank erosion site data were conducted for the Upper Mississippi River between St. Paul, Minnesota, and Cairo, Illinois, and the Illinois Waterway between Joliet, Illinois, and Grafton, Illinois, in order to assess the risk of bank erosion directly related to commercial navigation. The introduction of exponential weighting factors in risk analyses enabled evaluation of the significance of several important physical parameters that affect bank erosion processes. A model based on the field survey data was successfully applied to both the Upper Mississippi River and Illinois Waterway resulting in the identification of areas with high, medium, and low potential for commercial navigation induced bank erosion. The analysis cannot predict the occurrence or magnitude of damage at the identified erosion sites due to the interdependence of the geotechnical and hydraulic processes occurring along the banks of the Upper Mississippi River. The results of this analysis are presented on GIS-based color mapping of the bank-erosion risk categories.