

Management of Dredged Material and Sediments in the Watershed: A Great Lakes Perspective

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Environmental values are underscored in Great Lakes dredging and watershed management by the fact that the Lakes represent one of the world's largest surface freshwater resources. In a continent – and world - defined more and more by the politics of water, the Great Lakes states and Canadian provinces of Ontario and Québec find themselves in a strong position of ownership, but one of commensurate responsibility. Thus the states and provinces are looking ever more vigilantly at the navigation dredging process in the Lakes, and related issues including management of dredged material and watershed approaches to soil erosion and sediment control.

As a transportation resource, the Great Lakes/St. Lawrence Seaway system continues to play a critical role in the North American economy. Tonnage in the U.S. and Canadian domestic trades is averaging about 164 million metric tons a year and import/export traffic via the Seaway adds another 30 million tons. This float supports industries vital to the region and the two respective countries. The iron ore and semi-finished steel trades alone have broad national interest; steelmakers in Great Lakes states and provinces served by maritime transportation currently represent about 70 percent of the raw steel manufacturing capacity in North America.

Add to this backdrop of environmental sensitivity and economic criticality the factors of:

- A decade of low water levels, and climate models predicting lower to come;
- Some of the highest dredging costs in the country tied to expenses of upland placement and diminishing number of contractors, among other things;
- Diminishing number of options, including open water placement, for dredged material management; and
- Chronically low O&M budget priority assigned to the Lakes.

These factors have all contributed to a watershed-based dredge management strategy in the Great Lakes with two primary functionalities: soil erosion control to minimize sediment loading in navigable channels and harbors, and increased beneficial use of dredged materials.

Soil erosion and sediment control in the Great Lakes is first a water quality issue. Having made much progress in addressing point sources of contaminants in the Lakes, emphasis is now being placed on non-point sources such as agricultural and urban runoff. A longstanding program in this area is the Great Lakes Basin Program for Soil Erosion and Sediment Control. Initiated in 1991 and authorized in the 2002 Farm Bill, this federal/state partnership has supported well over 200 demonstration and technical assistance projects throughout the Great Lakes region. The Basin Program is coordinated by the Great Lakes Commission in partnership with the U.S. Department of Agriculture (Natural Resources Conservation Service), U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers.

Navigational benefits of erosion control have been identified and promoted at some Great Lakes ports at tributary mouths, the most prominent of which is Toledo. The Maumee River watershed is the largest of all Great Lakes drainage areas covering 6,600 square miles in three states. Toledo also has the distinction of having the greatest need – by far - for maintenance dredging in the Great Lakes with a requirement of 750,000 to 900,000 cubic meters a year. Efforts to link the port's dredging needs to an upstream soil erosion program in the Maumee date back over 20 years but continue to be challenged by political and interagency jurisdictional issues among other things.

Promotion of beneficial use of dredged material has historically been a high priority for the Great Lakes Commission and the Great Lakes Dredging Team which it facilitates. One recent product promoting a regional approach to this activity was the 2004 document *Testing and Evaluating Dredged Material for Upland Beneficial Uses: A Regional Framework for the Great Lakes* which was accompanied by an annotated bibliography of 245 references and resources.

More recently, the Commission, working with, and supported by a grant from the U.S. Army Corps of Engineers, is developing tools to encourage and facilitate the marketing of recyclable dredged material, typically as soil or fill.

On the Great Lakes, there are three general categories describing dredged sediment; sediment suitable for beach placement, contaminated sediment, and non-contaminated sediment not suitable for beach placement. Many dredging operations involve non-contaminated sediments, which are typically removed from the system requiring disposal in a Confined Disposal Facility (CDF) or dumped in the open lakes without considering beneficial use alternatives. For some dredging projects, disposal issues can be problematic resulting in delays or even cancellation of dredging at harbors. This project will provide information that to enable dredged sediment to enter the marketplace as a viable source of material for a variety of projects where some type of soil or fill is needed.

Specifically the project will:

- Integrate data and information on sources of dredged sediment, the quality and quantity of sediment available for beneficial use;
- Conduct a market analysis of potential users and market demands for dredged sediments;
- Overlay sediment supply information with existing transportation infrastructure necessary to bring materials to available markets;
- Analyze the environmental and economic impacts and tradeoffs associated with dredging, including delays or termination of dredging projects;
- Publish the above data and information on a web site and in selected other media; and
- Generate outreach to a variety of public and private sector interests to share project findings and help realize identified market opportunities.

By providing this regional tool, the Commission and its project partners hope to encourage beneficial re-use of dredged material and provide the resources to identify markets for viable material that might have otherwise been overlooked on an individual project basis.

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