

Evaluation the In-Situ Capping Option at Waukegan Harbor

In the November 2004 report “Remedial Alternatives Analysis Document and Data Gaps Analysis Report” (RAAD-DGAR), U.S. EPA and their contractor performed a preliminary review of the costs and viability of an in situ sediment capping option for remediating contaminated sediments present in Waukegan Harbor. Results from this evaluation can be summarized by discussing the various portions of the harbor as three distinct segments: (1) the federally authorized navigation channel (includes Entrance Channel, Inner Harbor, and Inner Harbor Extension), (2) the Marina, and (3) the North Harbor.

The Federally Authorized Navigation Channel

In situ capping is not a viable option for the federally authorized navigation channel segments of Waukegan Harbor for two critical reasons. First, much of the federal navigation channel is currently shallower than the authorized operations and maintenance depth of -18 feet referenced to Lake Michigan Low Water Datum (LWD). Therefore, it is extremely unlikely that the U.S. Army Corps of Engineer would issue a permit to allow placement of capping material within a federally authorized navigation channel. Second, due to commercial navigation within the harbor, the sediments within and adjacent to the federal navigation channel are subject to extreme forces from the engines and bow thrusters of the commercial vessels. A cap placed within the federal navigation channel would need to include significant armoring of the bottom and side slope areas in order to prevent disruption of the cap material.

The Marina

Capping in the marina area could be a viable option, depending on the desired final water depth in the marina segment. The water depth throughout most of the marina segment is less than 10 feet, with a large portion of the area with less than 7 feet of water depth. A cap in a shallow area like this would be subject to substantial wave action, and would probably required several layers (e.g., sand cover followed by 3-inch sized stone) in order to maintain its integrity. A cap of this nature would reduce water depths in this segment by 18” to 24”. In areas where the stakeholders do not wish to sacrifice 18” to 24” of water depth, the in-situ capping option would need to incorporate some amount of dredging.

Additionally, areas within the marina segment that are adjacent to the federal navigation channel would also need to incorporate some dredging in order to create a stable side slope between the federal navigation channel and the marina. Once a stable side-slope is created, the slope could be capped, but would probably require some type of armoring to resist forces created by the commercial traffic within the navigation channel.

The required removal volumes and armoring would increase the cost of this option.

North Harbor

Capping in the North Harbor segment was considered a potentially viable option in both the RAAD-DGAR 2004 report and a Value Engineering Evaluation report completed in

July 2006. Technical details of any capping remedy in the North Harbor should be coordinated with the adjacent property owners to determine impacts of reduced water depth on operations and use. However, water depths throughout much of the North Harbor segment would seem sufficient to allow placement of a cap without significant impacts to site use.

Long-Term Operations and Maintenance

It should be noted that under the Great Lakes Legacy Act, long-term operations and maintenance (O&M) are the responsibility of the non-federal sponsor of the project. Long-term O&M costs should be evaluated as part of the overall review of project costs.

Overview of Site

