

# **Application of Dredged Sediment Studies to the Management of Overboard Disposal Sites**

**William Panageotou and Jeffrey Halka**  
*Maryland Geological Survey, U.S.A.*

Maintenance dredging of the shipping channels in the northern Chesapeake Bay is an ongoing process necessary to ensure navigational access. However, adjacent designated overboard disposal sites have been gradually filling in and planning for future dredging projects is dependant, in part, upon the remaining site capacity.

Two different methods are used to dredge and transport the sediments from the channel to the overboard sites: (1) hydraulic cutterhead suction dredge with transfer of the sediments via a connecting pipeline, and (2) clamshell bucket dredge with transfer of the sediments via towed bottom-dumping scows. Each produces a distinctly different deposit type. Sediments released from scows typically create positive relief consolidated mounds with relatively steep side slopes averaging about 2.0V:100H. In contrast, hydraulically dredged and deposited sediments are initially fluidized and fill in negative relief areas. The hydraulic deposits have low slopes on the order 0.25V:100H and are capable of spreading large distances from the disposal site.

A number of related studies have been carried out at the Maryland Geological Survey on the dredged sediments. The objective was to determine the physical behavior of the overboarded dredged sediments in both the shallow and deeper water environments that exist in the location of the disposal sites. The results of the studies have been used to: (1) understand the fate of the sediments from the time of discharge, through deposition, to burial by subsequent deposits; and, (2) determine the future capacity for the overboard disposal sites given various disposal options. The studies have shown that the fate of the discharged sediments varies significantly according to the dredging and disposal method and the subaqueous environment at the disposal sites. By understanding the behavior of deposited dredged sediments a series of steps can be carried out to estimate the remaining capacity of the sites.

In the past, disposal occurred without guidelines to either maximize site capacity or minimize the spread of the deposits beyond the designated disposal area. With the information from these studies, planners can henceforth better manage the sites to assure that the most prudent measures are taken. The results of these studies are also utilized to provide information to resource managers for the issuance of Water Quality Certification for disposal operations and to insure consistency with the Coastal Zone Management Act of 1972. As the current disposal sites reach capacity, the information from these studies can be utilized to plan for new sites and assist in the determination of the potential for environmental impact.