

EXECUTIVE SUMMARY

Our knowledge of the physical factors that control the deposition of dredged material suggested that in deep water most deposits will cover a relatively large area with only minor vertical relief. From this argument and barge log volume calculations, it was presumed that material disposed in MBDS at the "MDA" buoy since November 1988 would not provide a vertical signature large enough to be observed with precision bathymetric equipment. This study, conducted from 13 to 17 August 1990, set out to test the supposition through bathymetric and REMOTS® surveys. The thickness and extent of dredged material surrounding the "MDA" disposal buoy were mapped and compared to data collected in 1988 and 1987. Against expectation, the bathymetric survey did indeed detect a mound measuring 0.8 m in height and 420 m in diameter.

The site boundaries for the interim Massachusetts Bay Disposal Site (MBDS) were established in 1977, but the area has been used for the disposal of dredged material at least since the 1960s. The disposal area during this study was a 2 nmi diameter circle centered at 42° 25.700' N and 70° 34.000' W. The MBDS received a great deal of public and private scrutiny during consideration as a permanent Ocean Dredged Material Disposal Site (as part of the final site designation by the EPA in 1993, the disposal site center was moved approximately 0.95 nmi southwest). Since the last survey in November 1988, an estimated 260,300 m³ of dredged material has been deposited at this site. The MBDS is expected to receive large volumes of material over the next several years due to the major construction projects underway in the Boston area.

The August 1990 bathymetric data around the "MDA" disposal buoy was compared to bathymetric data collected over the same area in 1988 and 1987. From 1987 to 1990, the dredged material had formed a mound 1 m high and 450 m in diameter. The portion of the deposit formed between 1988 and 1990 was 0.8 m high and 420 m in diameter. This demonstrated the successful formation of a well-defined dredged material mound at MBDS. The ability to form well-defined dredged material mounds is essential, if capping operations are planned to isolate contaminated dredged material at MBDS, should the need arise in the future.

"Fresh" dredged material, as indicated by chaotic sedimentary fabrics and anomalous grain size distributions, was detected in REMOTS® sediment-profile photographs out to 800 m west, 500 m south, 400 m east, and 500 m north of the center of the disposal site. These results showed an area of the seafloor affected by disposal activity 83% larger than that indicated by bathymetry. The REMOTS® photographs also indicated a steady recovery in the benthic ecosystem since the 1989 REMOTS® survey as indicated by an increase in Stage III taxa.

EXECUTIVE SUMMARY (cont.)

The bathymetric and REMOTS® sediment-profile surveys conducted at MBDS in August 1990 confirmed that dredged material released at this site forms a deposit 1 m high at the mound center. The flanks of the dredged material deposit extended from 400 m to 800 m from the disposal point.

The detection of the dredged material on the seafloor at MBDS, and the steady recovery of the benthic ecosystem while the site is being used for disposal, support the conclusion that dredged material released at MBDS has remained within the site, and that the benthic community has not been adversely affected by disposal.