

EXECUTIVE SUMMARY

This report presents a synopsis of relevant background information on baseline conditions at the Buzzards Bay Disposal Site (BBDS) as of March 1990. Disposal records indicate that since 1979, 92,000 m³ of dredged material consisting of relatively uncontaminated sands and silty-sands have been disposed at the site. Monitoring activities at the site have not been conducted by the DAMOS program over the past several years, because the site has been used infrequently. The largest collection of site-specific data was gathered by Germano *et al.*, (1989) in 1981, and regional data have been summarized in an earlier report (SAIC, 1989a).

From 27 to 29 March 1990, field operations were conducted at BBDS to provide information on the effects of past disposal operations. Field operations included a precision bathymetric survey, REMOTS® sediment profile photography, and sediment sampling for benthic, chemical, and physical analyses. The overall objective of the cruise was to characterize existing bathymetric, sediment grain size, sediment chemistry, and benthic conditions at and around the disposal site. Three reference areas were selected to provide comparisons between ambient and on-site conditions and were located 3107 m northwest, 3940 m west, and 2600 m southwest of the disposal site center.

The information obtained from the bathymetric survey and REMOTS® photos permitted the detection of two disposal mounds within the surveyed area. The primary mound was central to the disposal site, 1.2 m high and 60 m wide. The other, south and west of the center mound, was 1.6 m high and approximately 90 m wide.

The major modal grain size over the surveyed area ranged from medium sand (2-1 phi) to silt-clay (≥ 4 phi). All stations containing a major mode of medium (2-1 phi) and fine (3-2 phi) sand fractions were rippled. The distribution of the major modal grain size, as deduced from REMOTS® photographs, indicated a net bedload sediment transport of fine-grained material to the southeast along an 11.6 m isobath. Currents are most likely the dominant force contributing to the transport. The disposal site center consisted of rippled bedforms and fine sands which limited penetration by the REMOTS® camera.

The species composition found in this study was similar to that of benthic communities in Cape Cod Bay and Boston Harbor/Massachusetts Bay. Species richness was somewhat higher at the reference stations; however, both on-site and off-site stations were well within the range observed in soft-bottom, shallow water environments. Significant differences existed between reference stations and on-site stations in REMOTS® parameters for RPD depth, successional stages, and OSI values.

Sediment chemistry and grain size analysis results indicated expected levels of percent fines, metals, PAHs, PCBs, and pesticides. Currently, the surveyed area is healthy biologically and relatively uncontaminated. Continued monitoring of the site, through the DAMOS program, is suggested due to the proposed increase in utilization of the site. It is recommended that future physical oceanography studies of sediment transport be carried out to determine if off-site transport may be a problem.