

## EXECUTIVE SUMMARY

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In June 1991, SAIC conducted field operations at the Western Long Island Sound Disposal Site (WLIS) as part of the DAMOS (Disposal Area Monitoring System) Program for the U.S. Army Corps of Engineers, New England Division (NED). The objectives of this study were (1) to provide information on the fate and effects of dredged materials disposed since the previous July 1990 survey; (2) to assess the stability of the inactive disposal mounds; (3) to determine the extent of infaunal recolonization; (4) to measure near-bottom dissolved oxygen concentrations; and (5) to collect additional PAH and metals data at the three reference areas. Field operations included a 1200 × 800 m bathymetric survey, REMOTS® sediment-profile photography, near-bottom dissolved oxygen measurements, and sediment sampling for chemical and physical analyses.

Based on recorded disposal volumes, 86,462 m<sup>3</sup> of material was disposed during the 1990-1991 season. The resulting WLIS "E" mound was 3.0 m high with an elliptical footprint of 400 × 175 m. The WLIS "A", "B", and "C" mound heights remained unchanged since the previous July 1990 bathymetric survey and were considered to be stable. The height of the WLIS "D" mound decreased approximately 0.5 m, primarily due to the consolidation of the mound sediments.

Infaunal recolonization of the recently deposited material occurred rapidly as 90% of the on-site stations provided evidence of Stage III activity. Several stations west of the WLIS "D" mound continued to exhibit low reflectance subsurface sediments although the recolonization status was normal. Low reflectance, inferred to represent sediments from the previous year's survey with high oxygen demand, indicated potential deleterious effects of disposal operations and, therefore, warranted further investigation.

Dissolved oxygen and sediment chemistry were analyzed at three WLIS reference areas (2000W, 2000S, and WLIS-REF). Concentrations of dissolved oxygen in near-bottom waters at the disposal site and reference areas were spatially homogeneous and within aerobic levels. REMOTS® parameters indicated that reference areas 2000S and WLIS-REF had received disposed material in the past, whereas reference area 2000W had benthic habitat conditions characteristic of ambient sediments. Sediment chemistry analyses reflected this disparity among the three reference areas, with the highest concentrations of PAHs and metals occurring at 2000S and the lowest concentrations occurring at 2000W. Consideration should be made to replace reference areas 2000S and WLIS-REF (as comparison areas for the disposal site) with areas deemed not affected by historical disposal operations.