EXECUTIVE SUMMARY

The Portland Disposal Site (PDS) was monitored by Science Applications International Corporation (SAIC) in the summer of 2000 as part of the Disposal Area Monitoring System (DAMOS). Field operations were concentrated around the PDA 98 disposal buoy location and consisted of precision multibeam bathymetric and Remote Ecological Monitoring of the Seafloor (REMOTS®) surveys. These surveying techniques were employed to monitor the development and the benthic recolonization of the dredged material deposit around the PDA 98 buoy.

In November 1998, the DAMOS disposal buoy "PDA 98" was deployed at 43° 34.147´ N, 70° 02.209´ W (NAD83) within a natural containment basin on the PDS seafloor. During the 1998/99 dredging season an estimated barge volume of 471,400 m³ of sediment was sequentially dredged from the federal channel and various marine terminals in Portland Harbor and placed within PDS. An additional 18,300 m³ of Portland Harbor dredged material was deposited within PDS during the 1999/00 dredging season. Though most of the material was placed at the PDA 98 buoy, some material was also deposited around the U.S. Coast Guard "DG" buoy, located approximately 650 m northeast of the PDA 98 buoy. Over the two year period, approximately 315,600 m³ of material was deposited around the PDA 98 buoy and 174,100 m³ of material was deposited around the DG buoy.

The results of the summer 2000 field effort indicated the formation of two detectable sediment deposits on the PDS seafloor. The deposit in the vicinity of the PDA 98 buoy displayed a maximum height of 2 m and a diameter of 600 m along the northwest-southeast axis of the bottom feature. The second sediment deposit was an accumulation of dredged material placed at the DG buoy, with a height approaching 2 m and a width of approximately 270 m. The reported placement positions obtained from disposal barge logs indicated the majority of the DG deposit was composed of sediments removed from the outer reaches of the federal channel in Portland Harbor, as well as sediment deposited in winter 2000 emanating from two small maintenance projects.

The multibeam depth difference results indicated that most of the dredged material placed near the PDA 98 and DG buoys accumulated in the deeper areas among the bedrock outcrops. Sediment-profile photographs collected in the vicinity of the PDA 98 buoy generally confirmed the findings of the bathymetry, showing the presence of dredged material at 27 of the 28 sediment profile stations, including most of the stations on or around the bedrock outcrops. The surface of the dredged material deposit appeared well oxygenated, with Redox Potential Discontinuity (RPD) depths ranging from 1.4 cm to 6 cm. Furthermore, the REMOTS® photographs confirmed the presence of a well-developed Stage I benthic infaunal population with progression to Stage III at greater than 50% of the stations established around the PDA 98 buoy location.

The benthic community over the dredged material deposit around the PDA 98 buoy appeared to be recovering as anticipated, with Organism-Sediment Index (OSI) values ranging from +3 to +11, but, as expected, was slightly lower relative to the surrounding reference areas. The continued recovery of the seafloor around the PDA 98 buoy is anticipated over the next several years, as Stage III activity becomes more widespread and RPD depths deepen due to increased bioturbation and oxidation of organic matter contained within the deposited sediments.