EXECUTIVE SUMMARY

The two objectives of the Western Long Island Sound Disposal Site (WLIS) survey conducted 24 to 27 August 1993 by Science Applications International Corporation (SAIC) were to locate a new reference area to replace the existing WLIS-REF reference area, and to monitor ecological conditions at selected stations on the WLIS A and D disposal mounds. This survey was performed as part of the Disposal Area Monitoring System (DAMOS) Program under the auspices of the New England Division (NED) of the US Army Corps of Engineers.

Field monitoring surveys conducted in 1991 and 1992 indicated that, based on sediment chemistry analyses, grain size information, and Remote Ecological Monitoring of the Seafloor (REMOTS®) data, the WLIS-REF reference area did not adequately represent ambient sediments. These reference area characteristics are critical to all dredged material disposal activities as they provide the comparisons needed for all field monitoring surveys conducted at WLIS. Concurrent with these findings, conditions observed at the WLIS A and D mounds from 1990 to 1992 suggested a potential long-term influence of dredged sediments on the benthic habitat in terms of apparent habitat quality and recolonization rates. This has been an area of concern since the 1989/1990 disposal season; as of 1992, several stations did not exhibit the typical temporal infaunal recolonization response expected following disturbance from disposal of dredged material. The 1993 monitoring of these selected stations was conducted in accordance with the DAMOS tiered monitoring program developed in 1989 by scientists at NED and SAIC and by members of a Technical Advisory Committee (TAC).

Pursuant to these objectives, the search in 1993 for an alternative reference area began by visually inspecting reconnaissance sediment sample grabs and measuring water depths at 200 m intervals from the center of the existing SOUTH reference area. These samples were compared to the physical sediment characteristics of reconnaissance grabs and water depth measurements taken in the SW corner of WLIS and to samples taken at the center of the SOUTH reference area. Sediment characteristics obtained from REMOTS® photographs collected at these stations were also used to delineate the newly proposed reference area. Based on the results of the reconnaissance survey, sediment chemistry grab samples were taken at selected stations in the proposed new reference area and the SOUTH reference area to provide the analytical chemical data needed to confirm that the sediments adequately reflected ambient sediment chemical concentrations. Ambient sediments were characterized based on sediment grain size, total organic carbon (TOC), and chemical concentrations of trace metals, polycyclic aromatic hydrocarbons (PAHs), and pesticides and polychlorinated biphenyls (PCBs).

The second objective, the assessment of the benthic recolonization status at selected stations on the WLIS A and D disposal mounds, was accomplished by conducting a REMOTS® monitoring survey at the same station locations in 1993 as were occupied in the 1991 and 1992 surveys. The results of the 1993 REMOTS® data were evaluated independently and then compared to the 1991 and 1992 data to assess the status of benthic habitat and recovery.

The results of this 1993 monitoring survey indicated that, based on reconnaissance sediment grabs, REMOTS® sediment-profile photographs, and sediment chemistry analyses, an area southwest of the disposal site, henceforth, SW-REF, was an acceptable alternate reference area.

Acceptable reference area sediments were observed in an area 600 m to the west and east of the SW-REF center located at 40°58.487' N and 73°29.909' W, and 300 m north and south. Chemistry data showed that the SW-REF sediments were similar in metal and PAH distribution as SOUTH, previous data collected at WLIS reference stations, and regional data as compiled by the National Status and Trends Program.

Analysis of the 1993 REMOTS® photographs from the WLIS A and D mounds indicated benthic conditions improved at WLIS A and ranged from similar to slightly improved at WLIS D from those observed during the July 1992 survey. According to the tiered monitoring protocols, these conditions do not warrant immediate management response. However, considering the historical recolonization response at the selected stations of the A and D mounds, continued monitoring of these stations is recommended during future WLIS monitoring surveys.