

## EXECUTIVE SUMMARY

In 1982 a large cooperative study was initiated between the U.S. Army Corps of Engineers' waterways Experiment Station, Vicksburg, MS (WES) and the U.S. Environmental Protection Agency's Environmental Research Laboratory, Narragansett, RI (ERL-N). This study, called the Field Verification Program (FVP), was designed to investigate three options to the disposal of contaminated dredged material and the adequacy of biological laboratory testing procedures for predicting actual field measured responses.

The source of the dredged sediment used for the study was Black Rock Harbor (BRH) in Bridgeport, CT. WES investigated the effects of disposal at both upland and wetland sites and ERL-N investigated effects associated with the aquatic disposal of this material at the Central Long Island Sound (CLIS) disposal site. Munns et al. (In preparation) describes the aquatic portion of the study in considerable detail.

Field studies were carried out at all three sites, and laboratory experiments were conducted at both WES and ERL-N. For the laboratory studies it was necessary to collect a large and representative composite dredged material sample. This was accomplished by collecting sediment to dredging depth with a large box core at stations all along the channel to be dredged. Figure 1 shows a representation of the study area and the location of aquatic disposal at the Central Long Island Sound Disposal site.

The sediment collected from the dredging area for the laboratory studies was placed into a commercial cement mixer for homogenization. This composite sediment was then placed in a series of 55 gallon drums; the drums of BRH material were transported to WES and ERLN and refrigerated.

The contaminant concentrations in this BRH sediment composite have been extensively characterized (Rogerson et al., 1985) at ERL-N. In addition, a sample of this material was transported to the U.S. Environmental Protection Agency's Environmental Research Laboratory at Duluth, MN (ERL-D) in September of 1986 for the analysis of polychlorinated dibenzo-pioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs). Preliminary results from these analyses indicated very high levels of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-tetraCDD) . This caused concern because this compound is one of the most toxic compounds known for some species. Further analysis was therefore warranted to confirm these results or detect possible contamination or analytical problems. The final results from this initial sample and the results of subsequent analyses that have been conducted on the BRH composite sample at ERL-D have shown that the concentration of 2,3,7, 8-tetra-CDD is much lower than the preliminary results indicated. However, this material does contain numerous PCDD and PCDF compounds (ERL-D, unpublished data).

The purpose of the present study was to measure the levels of PCDDs and PCDFs in five archived sediment samples from Black Rock Harbor in Bridgeport, CT and Central Long Island Sound in order to confirm the results from ERL-D. The five samples analyzed included a sample of the original BRH composite sediment, dredged material collected from the wetland and upland disposal sites, and two sediment core samples from the CLIS disposal area. The samples chosen from CLIS included one from the 4-6 cm section of a sediment core taken from 200 meters east of the FVP disposal mound center on BRH dredged material. This sample was chosen because it contained the highest PCB concentration (Munns et al., In preparation) on the last sampling date (10/22/85) of the FVP study. It was selected to represent potentially a worst case condition now existing at the CLIS disposal site. In addition, a sample of the 4-6 cm section of a sediment core from the Reference station was also chosen for comparison. This sample should represent background levels in Central Long Island Sound.

Analysis of all five samples was performed by Battelle Columbus Laboratories (Columbus, Ohio); the concentrations of PCDDs and PCDFs measured in these samples are reported. The analytical procedures used to obtain the results are described, and a discussion of the results in comparison with those reported by other studies is included.