

EXECUTIVE SUMMARY

After fine-grained dredged material was released at the Cornfield Shoals Disposal Site (CSDS) between October 1991 and May 1992, there was evidence that ambient sand was being transported over the fine-grained dredged material deposit. The presence of ambient sand over fine-grained dredged material in REMOTS® sediment-profile photographs, current meter studies, and transmissometer and backscatter data all supported active bedload transport in a study conducted at CSDS in 1991/1992. However, the areal extent of the fine-grained dredged material under the sand and the thickness of the sand cover were unknown.

The present study, conducted at the Cornfield Shoals Disposal Site in August 1992, attempted to delineate the extent of the fine-grained dredged material under the sand and to measure the sand thickness. Part of the May 1992 REMOTS® survey was repeated in August. All but two stations that were formerly fine-grained dredged material had been covered with sand by August. The new REMOTS® stations in August were concentrated south of the mapped fine-grained deposit. Dredged material was detected under sand at two stations south of this area, extending the dredged material boundary to the south.

An acoustic sediment density study was conducted at CSDS to define the surface sediment density and locate the fine-grained dredged material. It was also conducted to gather subsurface sediment density information and map the thickness of the sand over the mud. The surface density values, calculated every 50 m along the survey track, did not delineate the fine-grained material that was at REMOTS® stations G8 and G9. Subsurface densities were measured at 15 cm intervals below the sediment water interface. These subsurface densities did not detect any decrease in sediment density with depth, suggesting that the depth to the base of the mud was less than 15 cm or that the acoustic survey was unable to detect the density changes.

The transformation from fine-grained dredged material at the center of the mound to sand over mud or sand at all but two REMOTS® stations (G8 and G9) continues to support the theory that sand is being transported over the fine-grained dredged material at the Cornfield Shoals Disposal Site. This is not unexpected in that the site is a dispersive site and material is normally transported across and ultimately out of the area.

The acoustic sediment density study was not successful in locating the fine-grained dredged material either at the center of the disposal mound or under the sand on the flanks of the deposit. The lack of success with the 24 kHz acoustic survey may have been due in part to the resolution of the system, but attention to and adjustment to varying system parameters in future surveys may result in more successful distinction between subbottom layers.