EXECUTIVE SUMMARY

Over 100,000 m^3 of mechanically dredged fine-grained material was released at a taut-wire moored buoy at the Cornfield Shoals Disposal Site (CSDS) during disposal operations in 1991 and 1992. Despite the fact that this is a high energy dispersive disposal site, the fine-grained dredged material did form a mound that was detected during bathymetric and REMOTS® surveys in 1992. Over time, active bed transport of ambient sediment at the site has produced areas of accumulation and areas of loss. Active bed transport also may have caused the fine-grained deposit to be covered by sand. If sand has been transported over the fine-grained material, the usefulness of REMOTS® sediment-profile photographs in mapping the dredged material deposit is limited. The sand makes it difficult for the camera prism to penetrate to the depth of the dredged material. Due to the limitation of the REMOTS® method, a swept frequency subbottom profile survey was conducted at CSDS in 1994 to map the extent of this fine-grained deposit.

The 1994 bathymetric survey detected minimal accumulation (25 cm) over the disposal mound since 1992. The 1994 bathymetry also detected accumulations over a broad area southeast of the disposal mound. At the disposal location, the subbottom profile survey detected an acoustic horizon at 1 m below the seafloor. Southeast of the disposal location, the subbottom record identified a sand wave field. Taken together, the results of the bathymetry and subbottom surveys mapped evidence of fine-grained dredged material accumulation at CSDS as well as evidence of active bed transport of ambient sand.

Fine-grained material was released at CSDS to examine whether this dispersive site was suitable for the disposal of cohesive, mechanically dredged silts and clays. The survey results suggest two approaches to the management of fine-grained dredged material at CSDS. Fine-grained material is likely to accumulate at CSDS if it is disposed at a taut-wire moored buoy. This management approach would allow close management of the material, but it may reduce site capacity. Fine-grained material may not accumulate if it is disposed in relatively small volumes at numerous discrete locations (e.g., LORAN-C coordinates). If the release of fine-grained dredged material is managed this way, resuspension and dispersal may prevent mound formation and retain site capacity.