

EXECUTIVE SUMMARY

Preliminary evidence of active bed transport at the Cornfield Shoals Disposal Site (CSDS) prompted the National Marine Fisheries Service and the Connecticut Department of Environmental Protection to express concern about possible sediment transport towards, and impact on, shellfish beds located north of the site, north of Long Sand Shoal. This preliminary study was designed to determine if the field-observed transport at the disposal site is consistent with the predicted east-west transport pattern found in the historical record.

This investigation at CSDS between July 1991 and May 1992 provided strong circumstantial evidence for active bed transport. The study included a series of bathymetric surveys, current meter and suspended sediment data collection, and REMOTS® photography of the sediment-water interface. The circumstantial evidence for active bed transport included shifts in areas of sediment accumulation and erosion, increased suspended sediment concentrations in the bottom waters coupled with high bottom currents, and bedforms and lag deposits at the sediment-water interface. In general, active bed transport appears to follow the historical east-west current direction, and the extent of transport depends on the type of material. The actual direction and magnitude of active bed transport apparently depend on local topography and the nature of materials being transported.

Sediment accumulated over a broad area near the disposal points of sand hydraulically dredged from the Connecticut River in September 1991. Subsequent bathymetric surveys showed an apparent movement of this material to the west. A clearly defined deposit formed at the disposal point for fine-grained material mechanically dredged from North Cove, Connecticut. This deposit of fine-grained dredged material apparently did not move, but was partially covered by bedload transport of adjacent coarse-grained sediments.

The present study concluded that:

- The predominant transport direction at the site appears to be east-west. This is supported by current meter deployments and observed erosion and deposition patterns.
- Sediment disposed at the site was not immediately dispersed and was defined within discrete deposits. This was observed for both fine-grained and sandy sediments.
- The dispersion process appears to occur over a period of weeks to months. The dispersion rate for fine-grained materials may be markedly slowed by sand armor that migrates over the more cohesive, less erosive silt-clays.

The above findings, taken over the ten-month time period, reduce concerns about far-field transport of material over oyster beds to the north. The dispersion of material over a time scale of years, and the effectiveness of the sand armor over the silt-clays, are unknown.