

Distribution of Contaminated Sediments in Western Long Island Sound

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Western Long Island Sound has been severely impacted by anthropogenic activities due to its proximity to the New York metropolitan region. As a result contaminants have both been dumped into the Sound or were transported from land into the sea during major run off periods (i.e. floods and storms). To assess the temporal and spatial distribution of contaminants in the sediments, we surveyed western Long Island Sound from the *R/V Hugh Sharp* during the summer of 2006. We collected multibeam bathymetry, high-resolution subbottom profiles and 25 gravity cores. The lithology, grain size variability and mercury concentrations were studied within the context of the geophysical images for Cores 2, 15, 21, 22, and 24.

The sediments are dominantly fine grained (clay and silty clay), and these fine-grained sediments display affinities for adsorption of contaminants (Mecray and Buchholtz ten Brink 2000). Post-industrial (1850) Hg concentrations are high (up to 1200 ppb) in the upper 20 to 50 cm of sediment. Sedimentation rates are moderate to high ranging from 1.3 to 3.3 mm/yr. Continuous sedimentation and accumulation of Hg on sea-floor of the Sound is restricted to protected regions. Most sediment accumulation is episodic and characterized by periods of erosion and deposition. This indicates that contaminants are very mobile. The sedimentation processes that transport and redistribute the contaminated sediment include nepheloid plumes derived from the rivers and shallow bays, storm generated waves, storm surges due to hurricanes, and low velocity tidal currents (10cm/s).