

OVERVIEW OF LSTF FIXED-BED EXPERIMENTS

The Longshore Transport Facility (LSTF) was designed to generate waves and currents and conduct sediment transport experiments at a large scale. The facility consists of an active pumping and recirculation system comprised of 20 independent pumps and pipelines used to control the cross-shore distribution of the mean longshore current. Pumping rates are adjusted in an iterative manner to converge toward the proper settings, based on measurements along the beach. To evaluate the performance of the recirculation system, and as a precursor to sediment transport experiments, two comprehensive test series were conducted on a concrete beach with straight and parallel contours (1:30 slope), one using regular waves and the other using irregular waves. In the regular wave case, the wave period was 2.5 sec and the average wave height at breaking was approximately 0.25 m. In the irregular wave case, the peak wave period was 2.5 sec and the significant breaking wave height was approximately 0.21 m. Both cases were conducted with an incident wave angle of 10 deg and water depth at the wave generators of 0.67 m. The data obtained from the two fixed-bed experiments include free-surface elevations and orbital wave velocities and unidirectional longshore currents, as well as the bathymetry of the concrete beach. Information about the test series can be found in:

[Hamilton, D.G., and Ebersole, B.A., 2001. Establishing Uniform Longshore Currents in a Large-Scale Laboratory Facility. *Coastal Engineering*, 42, 199-218.](#)