- The Owen tube is essentially a 1 m long perspex tube of 50 mm internal diameter. It is initially open at both ends and is lowered, usually from a boat, into the water where it is suspended horizontally in line with the flow at the depth where sample is desired. After a short time, when flow through the tube has been established the ends of the tube are closed off and the tube containing the sample is raised to the working deck. The tube is designed so that as it is lifted out of the water it automatically swings to the vertical position. At this precise time a stopwatch is started and the settling test is begun.

One test gives just one point for W_{50} (by weight) for one initial concentration. However since both W_s and C change with time at each elevation, it is feasible to obtain a complete W_s-C relationship from a single test. This latter approach, due to McLaughlin (1959) has been further improved by Ross (1988).

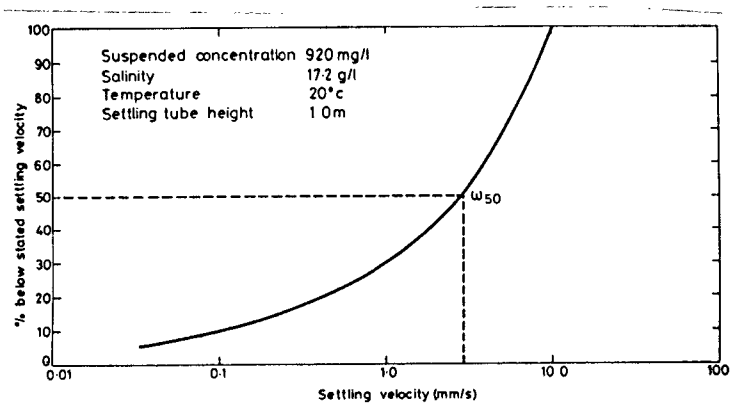

Fig. 14. Settling velocity distribution obtained from Owen tube or settling column test.
Source: Burt (1986)

Slope and intercept (n and k_1) of the settling velocity-concentration curve in the flocculation settling range are strongly dependent on sediment type and rates of shearing in the water column.

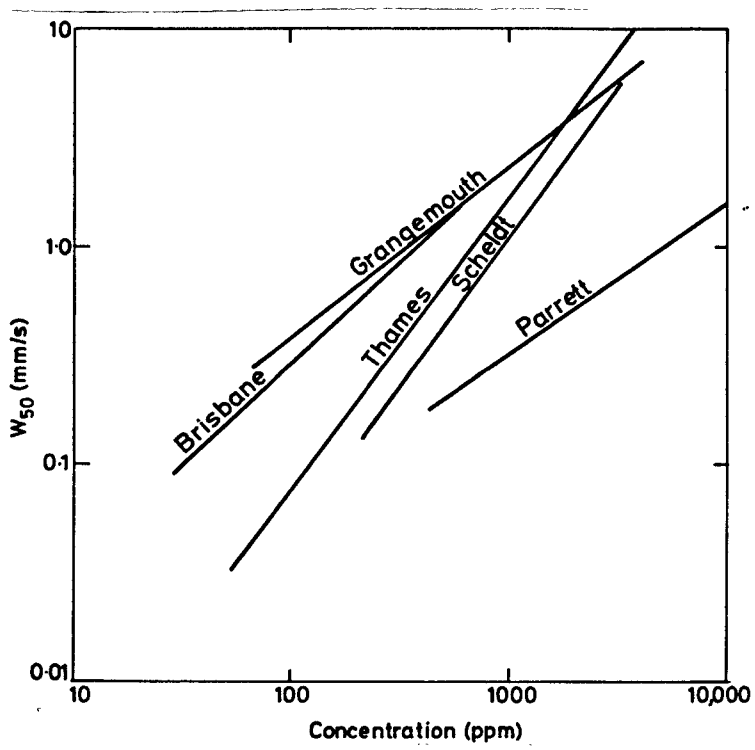

Fig. 15. W_s-C data from five estuaries.
Source: Burt (1986)

- In the hindered settling range, laboratory column may be used to simulate prototype behavior because flow shearing is less important in this case. Settling is controlled by the rate of upward escape of interstitial water.