

Hydraulics

a) River Mechanics/ Sediment Transport Mechanics

The seepage flow through boundaries of alluvial channels, rivers and streams is a common occurrence because of the porosity of the earthen material and the difference between the water levels in the channel and the adjoining ground water table. In India, as per Indian Standards, the loss of water due to downward seepage (suction) in alluvial channels constitutes a substantial percentage of usable water, of the order of 45% of the water supplied at the head of the canal; and generally it varies from 0.3 to 7m³/s per million square meters of wetted area.

Studies were undertaken to investigate the hydrodynamic behavior of alluvial channels affected by seepage with a couple of objectives: (1) Development of a procedure to design stable alluvial channels by taking into consideration seepage as an explicit design variable and (2) Investigation of effect of seepage on the alluvial channel regime and its quantification towards the design. The results obtained were very encouraging and they have proved conclusively that seepage can alter significantly the hydrodynamic behavior of alluvial channels. The experimental investigations have a great practical relevance not only in the design of alluvial channels but also towards better understanding of the mechanics of sediment erosion and deposition problems as well as the hydrodynamic behavior of the channels with erodible bed and banks.

b) Flow Measurements

A low cost but modern digital micro-manometer for research laboratories' was developed indigenously for better research in measurements of micro pressure heads in the order of one micron of mercury (Hg). It is very economical, costs hardly one-fifth of similar imported equipment.