

THE EFFECT OF CUT-OFF WALL ON THE CANAL SEEPAGE
BY ELECTRIC ANALOG MODEL

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ABSTRACT

The canal seepage results in loss of large quantities of water and waterlogging in vast areas particularly, adjacent to the canal. Lining of canals, installation of drainage tube wells or interceptor drains can be used to control canal seepage. However, these methods have certain limitations. Cut-off walls placed along side of canal can also be employed to minimize canal seepage.

This study was undertaken with objectives to investigate the effect of cut-off wall on reducing the canal seepage and lowering of water table adjacent to the canal. The feasibility of cut-off wall on reducing canal seepage was investigated by an electrical resistance analog model and solution for a series of cut-off wall configurations with different depths and positions of cut-off wall were obtained.

The main objectives were to study the reduction in seepage rate and free surface profiles after the installation of cut-off wall. It was found that the placing of cut-off wall along side of the canal has a significant effect on reducing canal seepage and lowering the water table in the areas adjacent to the canal. In this respect depth and position of the cut-off wall are important design parameters.

The seepage reduced from the canal increases with the increase in depth and position of cut-off wall from the center line of the canal. And with the increase depth and position of cut-off wall, the lowering of water surface profiles was enhanced considerably. The seepage can be reduced as much as to 17% by installing cut-off wall.

the cut-off wall can also result in a marked decline in water surface profile (as much as 3.5 m).

Analog model studies have shown the feasibility of cut-off wall in reducing considerable part of the seepage from the canals. Cut-off wall installed parallel to the irrigation canal can alleviate the problem of waterlogging by reducing canal seepage and lowering water table. The study emphasize the need for detailed field work within the aquifers in vicinity of the canals.