

**QUANTIFICATION OF FLOW RESISTANCE IN  
ALLUVIAL CHANNELS RELATED TO VARIOUS  
PARAMETERS**

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**Abstract:**

This paper reports a model developed to predict and quantify the flow resistance in alluvial unlined channels and reviews previous work done on this subject. Alluvial Channel Observation Program (ACOP) data for Jam Rao canal (Sindh, Pakistan), collected by Water and Power Development Authority (WAPDA) Lahore, Pakistan, has been used to quantify the flow resistance in alluvial channels. Using dimensional analysis specific equations relating Manning's flow resistance coefficient ( $n$ ) and twelve dimensionless groups of hydraulic, morphological and sediment canal parameters have been developed, with the help of fitted line and matrix formation methods. Fitted line method provides almost same values for canal data 1 and 2, canal reach RD 72-80 and RD 253-261 respectively. Moreover the matrix formation method calculated widely varied values for the above two reach and thus showing inapplicability of the method for scattered data with high coefficient of variance (COV) values. For comparison, the values of  $n$  have also been calculated for the same data by Lacey's and Limerinos equations.

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