

REGRESSION MODELS FOR  
SNYDER'S SYNTHETIC UNIT HYDROGRAPH PARAMETERS

BY

NAVEED ANWER

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*CENTRE OF EXCELLENCE IN WATER RESOURCES ENGINEERING  
UNIVERSITY OF ENGINEERING AND TECHNOLOGY  
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A B S T R A C T

Sixteen gauged sample watersheds in the range of 56 to 1250 sq. miles from the regions of Murree Hills, Hazara, Potwar and Makran Coast are selected. Rainfall runoff data for 65 storm events are provided to HEC-1 Flood Hydrograph Package to optimise the one hour duration Snyder's Unit Hydrograph parameters and base length, which are expressed in the form:

$$P = f(x_1, x_2, x_3 \dots x_n)$$

by measurable watershed physical features using multiple regression analysis. U.S. Army Corps of Engineers Equations for  $W_{75}$  (unit hydrograph width in hours at 75% of peak discharge) and  $W_{50}$  (unit hydrograph width in hours at 50% of peak discharge) are modified to derive synthetic unit hydrographs for small catchments in Pakistan.

Validity of the simulated regression models and modified U.S. Army Corps of Engineers Equations for  $W_{75}$  and  $W_{50}$  is tested by comparing the predicted and observed unit hydrographs for two watersheds. Results achieved are quite satisfactory and indicate that the simulated models can effectively be applied to catchments having areas upto 1250 square miles to develop unit hydrographs.