DEVELOPMENT OF A SIMPLE PROCEDURE TO SYNTHESIZE DIRECT RUNOFF HYDROGRAPHS FOR SELECTED CATCHMENTS IN PAKISTAN

SUBMITTED BY

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ABSTRACT

This study presents a procedure to synthesize direct runoff hydrographs of any unit amount and duration. Study has been carried out on ten catchments ranging in size from 56 to 1250 square miles located in the vicinity of Mangla and Tarbela dams in Pakistan.

The procedure simulates the 'Hydrograph Concept' given by Mutreja (1990) considering catchment as a set of linear reservoirs in series. The excess rainfall is routed through the reservoirs to get a resultant direct runoff hydrograph. Nash-Muskingum equation (1959) has been used for outflow. This equation involves the only parameter i.e., Storage Routing Constant (K) which has been related with catchment physical features for generality.

The validity of the developed procedure has been checked by synthesizing direct runoff hydrographs for the catchments other than calibrated from the same region. The results are significantly predictable and comparable with the observed data. As a conclusion, it can be said that the developed procedure is equally applicable for both gauged and ungauged catchments. This can be used with a greater confidence in the forecasting, designing and planning of all hydrological works.