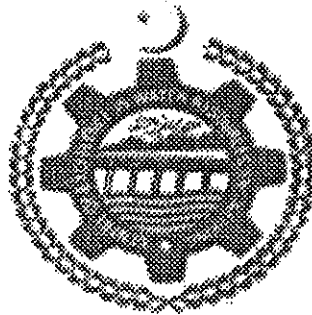


THESIS

**ESTIMATION OF FLOODS OF UNGAUGED CATCHMENTS IN
JHELMUM RIVER BASIN**



By

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ABSTRACT

Jhelum River is one of the major rivers of the Indus basin. It drains the northeastern part of Pakistan, which includes the territory of occupied Kashmir, Azad Jammu and Kashmir, Northwest Frontier Province (NWFP) and Punjab. It is the main source of the supply of water for inhabitants in this region, and is the main source of supplying water for irrigation and hydropower development. The major problem in Jhelum River Basin is the Scarcity of stream flow data. Therefore, under the circumstances of the lack of sufficient hydrological data, the rationalization technique has been used to provide estimate of the flow characteristics for ungauged or poorly gauged catchments. The present study covers the northeast part of Pakistan, up to Mangla dam.

The present study has been carried out to formulate a regionalized relationship which link the dependent variable (flood) and dependent variable i.e. catchment characteristics for mean annual floods.

Flood data were assembled for 15 hydrological stations located on upstream of Mangla Dam on Jhelum river basin. Multiple regression techniques were used to produce equations for predicting mean annual flood from physiographic and climatological basin characteristics. The mean flood equation obtained is as follow:

$$Q_{\text{mean}} = 0.076A + 497.15$$

Flood frequency analysis for the region was carried out and equations for different intervals were obtained. The log normal-3 distribution, whose parameters

were derived by both method of moment and method pf maximum likelihood, was found to describe adequately.

$$Q_2 = 0.0763 * A + 433.6$$

$$Q_5 = 0.0895 * A + 659$$

$$Q_{10} = 0.0947 * A + 856$$

$$Q_{20} = 0.103 * A + 1013$$

$$Q_{50} = 0.103 * A + 1364.3$$

$$Q_{100} = 0.103 * A + 1615.31$$

$$Q_{500} = 0.0997 * A + 2299$$

$$Q_{1000} = 0.0961 * A + 2645.3$$

From the catchments characteristics area A, mean annual flood Q, mean elevation E, slope of the stream S, length of the stream L, and mean annual rain fall were available in this study. Recommended equations require only area A. It is recommended that this pilot study be extended to the catchments showing similarity with the catchment under study and also to include more catchment parameters like, stream frequency, temperature, slope of the catchment, lake storage, extreme rainfall.