

PROBABILITY ANALYSIS OF PEAK RUNOFF
AND RAINFALL FOR
SELECTED CATCHMENTS OF N.W.F.P

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ABSTRACT

Very little is known about the peak runoff and rainfall distribution behavior for different catchments of N.W.F.P. Therefore this study was proposed to evaluate the peak runoff and rainfall for the last three decades for different catchments was analyzed. It will provide an efficient design procedure for estimating the probable maximum flood and peak rainfall replacing the old conventional methods adopted for this purpose. The conventional methods for determining probable floods were employed when probability analysis was not properly introduced.

The annual maximum daily total runoff and rainfall data of previous years for selected catchments of N.W.F.P were studied. The frequency curves of maximum runoff and rainfall data were plotted on the normal probability paper using three important continuous probability distributions such as Log-Pearson type-3, Lognormal and Gumbel distribution.

All the frequency curves were in close agreement with the observed data points except at the highest runoff and rainfall data. The Log-Pearson type-3 seemed the best fit for the observed data points. The Log-Pearson type-3 distribution showed a very close agreement with the Lognormal distribution whenever the coefficient of skewness was low. Moreover the Lognormal and Gumbel gave unsatisfactory results at the lower recurrence intervals in the frequency analysis of runoff.