

THESIS

ESTIMATION OF FLOOD LOSSES BY CHENAB RIVER BETWEEN KHANKI
HEADWORKS AND QADIRABAD BARRAGE

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ABSTRACT

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The study deals with the methodology to lay down a more comprehensive way of evaluating and estimating flood losses at different flood magnitudes. As the flood losses, mainly, occur due to depth and duration of inundation, so both these parameters were given priority in the losses estimation process. A detailed flood frequency analysis was carried out on the annual maximum peak flows by using different statistical distributions to predict future behavior of floods in Khanki-Qadirabad Reach of Chenab River. In this regard Lognormal, Log-Pearson Type-III and Gumbel distributions were checked and finally Gumbel Distribution with Weibull formula of plotting best fitted the data.

Flood losses were divided as agricultural, houses and roads losses. Agricultural losses were the main losses because most of the people of the area depend on agricultural activities. Agricultural losses were determined by considering the type of crop, their revenue and expenses and arranging the factor of crop loss. The losses of

metalled and non-metalled roads and houses were other main losses, considered in this study. These losses were estimated by calculating their step wise damages according to their values in monetary terms. In the process of flood damages estimation of all categories, the depth and duration of flooding were considered important parameters. Therefore different flood damages factors were derived at various flood depths while duration of inundation was assumed as 6 hours.

Only those losses were taken into account for damages evaluation which had the value in monetary units. The different economic activities were also considered in the form of other direct damages and indirect damages to obtain the losses. As the study area is confined by Left and Right Marginal Bund so flood plain area inside these bunds was calculated as 14915 ha. Flood damages were evaluated by multiplying the respective composite damage factor of different depths of 5, 10, 20, 50, 100 and 200 years return period flood magnitudes by the area inundated. Finally discharge-damage curves were plotted which exhibited the flood damages for different magnitudes of floods corresponding to different return periods.

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