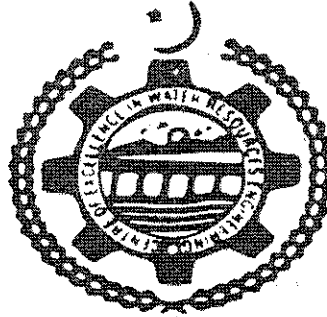


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THESIS

**HYDROLOGICAL ANALYSIS OF DAM SITE HAVING LARGE
VARIATION IN FLOWS**



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ABSTRACT

Topography and climate of Pakistan are exceedingly assorted ranging from low elevations at the coast to the high altitudes in the north. Rainfall varies from less than 8 inches in the western part of Baluchistan to more than 78 inches in northern areas. Objectives of this study was to hydrologically analyze the Parwara site including estimation of runoff from an un-gauged watershed, reservoir planning and operation for irrigation water supply and to estimate and rout the floods.

The selected site for the study was located at Parwara on Tarkha Khwar river about 30 km west-south of Dera Ismail Khan. The average monthly flows of Tarkha Khwar river are highly variable at the selected site. The runoff was estimated by using various techniques including: Strange Table method, SCS Curve Number, Lacey, Barlows percentage and rainfall-runoff coefficient. ET_0 was estimated using modified penman method. Reservoir operation was designed to meet the water requirement during dry season when there is shortage of water in the river. The peak flood was calculated with the help of unit hydrograph method and it was routed through the spillway using inflow storage discharge (ISD) method.

The results of the study revealed that the SCS Curve number is the best available method for estimation of inflows in an un-gauged catchment that yields average annual runoff of 1364 AF. The results of reservoir operation showed that 32 years out of 47 years would have no shortage of water. The reservoir would also reduce flood peak from 7,172 cusecs to 6,019 cusecs even when reservoir is filled up to the normal conservation level.