PROJECT REPORT

ON

"MORPHOMETRIC ANALYSIS OF WATERSHEDS IN THE KUNIGAL AREA OF TUMKUR DISTRICT, SOUTH INDIA USING REMOTE SENSING AND GIS TECHNOLOGY"

(KSCST Sponsored Project)

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ABSTRACT

Land, water and soil are limited natural resources and their wide utilization with increasing population is a major area of concern to mitigate the demand and supply gap between resources and ever increasing demand, it is of prime importance to conserve the natural resources with proper prioritization for its sustainable development. The present work includes mainly the Morphometric analysis of Kunigal Taluk. The study area of Kunigal Taluk is located in southern part of Tumkur district in Karnataka state. The Kunigal Taluk covers an area of 981 Sq.km. and average rainfall of 802mm. The area is bounded by the latitude North $12^0$44'38.74" to $13^0$8'1.16" and the longitude East 76^0 49' 43"to 77^0 9' 57". The main part of the area is covered under Survey of India (SOI) Toposheet numbers 57C/16, 57G/4, 57D/13, 57H/1, 57H/2 (Scale 1:50,000). Basin morphometry is a means of numerically analysing or mathematically quantifying different aspects of a drainage basin. In the present study, morphometric analysis of the Kunigal Taluk drainage basin has been carried by using earth observation data and Geographical Information System (GIS) techniques. The morphometric parameters considered for analysis includes the linear, areal and relief aspects of the basin. Morphometric analysis of 27 sub-watersheds falling parts of Shimsha River. The morphometric analysis is done by using GIS software such as Arc GIS Ver 9.2, Erdas Imagine Ver 9.1 and also used for preparation of Digital Elevation Model (DEM). A digital elevation model (DEM) is a digital representation of ground topography or terrain. It provides an idea of slope and direction of flow. It is created using Erdas Imagine ver 9.1. Around 36 morphometric parameters were computed by using software and formulae .The drainage network shows that the terrain exhibits dendritic drainage pattern. Stream orders ranges from second to fifth order. Drainage density varies between 0.836 and 3.058 Km/Km^2 and has very coarse to moderate drainage texture. The mean bifurcation ratio varies from 3.04 to 5.71. Circulatory ratio ranges from 0.315 to 0.803. From the study it can be concluded that remote sensing techniques and GIS tools proved to be a competent tool in morphometric analysis. These studies are very useful for watershed management and also land, water and soil management.

Key words: Arc GIS Ver 9.2, ArcMap, Erdas Imagine Ver 9.1, Morphometric analysis, DEM.