



SNS COLLEGE OF TECHNOLOGY

An Autonomous Institution Coimbatore – 35

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and Affiliated to Anna University , Chennai.

DEPARTMENT OF AGRICULTURAL ENGINEERING

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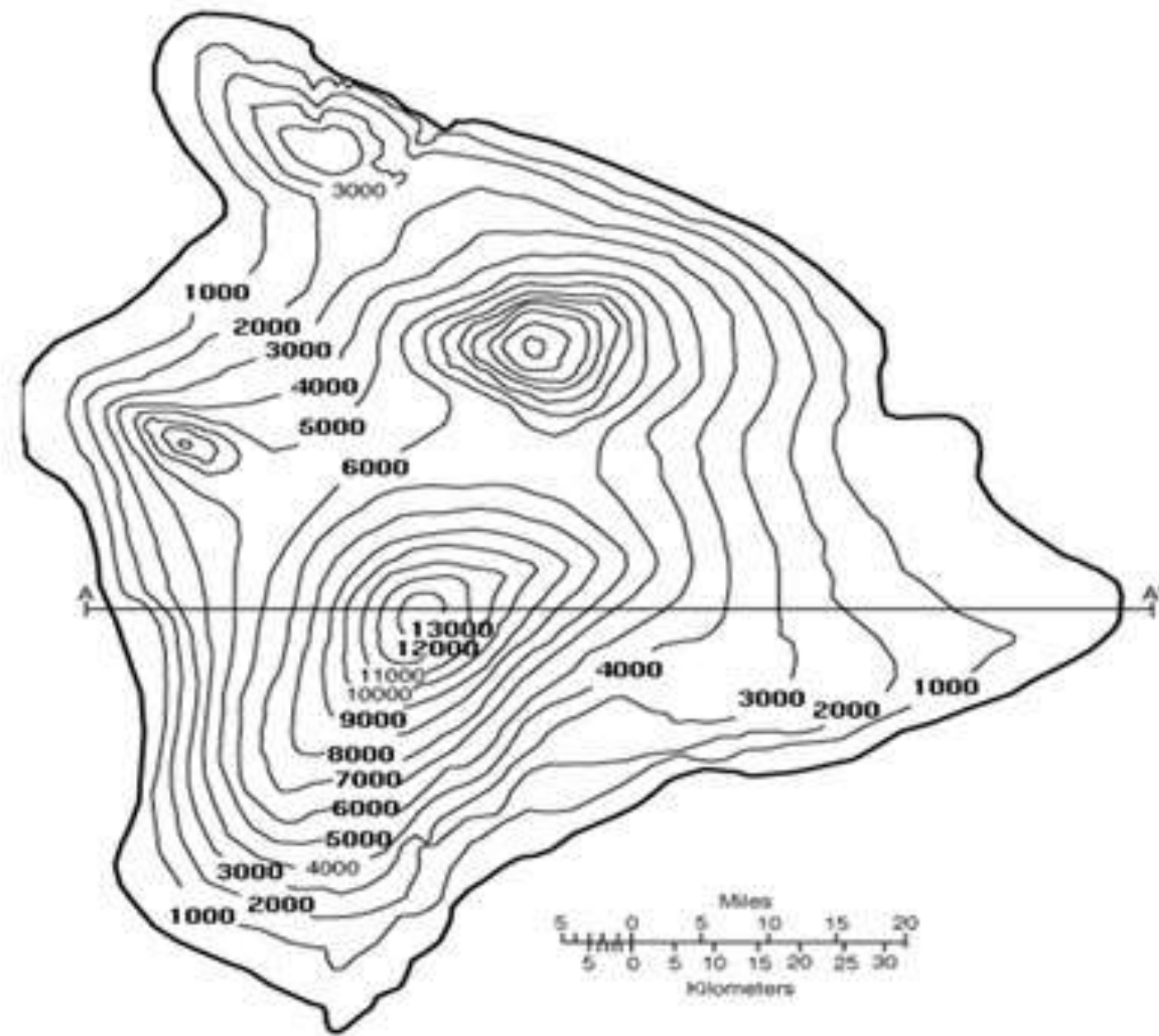
WATERSHED PLANNING AND MANAGEMENT





Watershed Delineation

Watershed Boundary Delineation from Contour/Topographic Maps



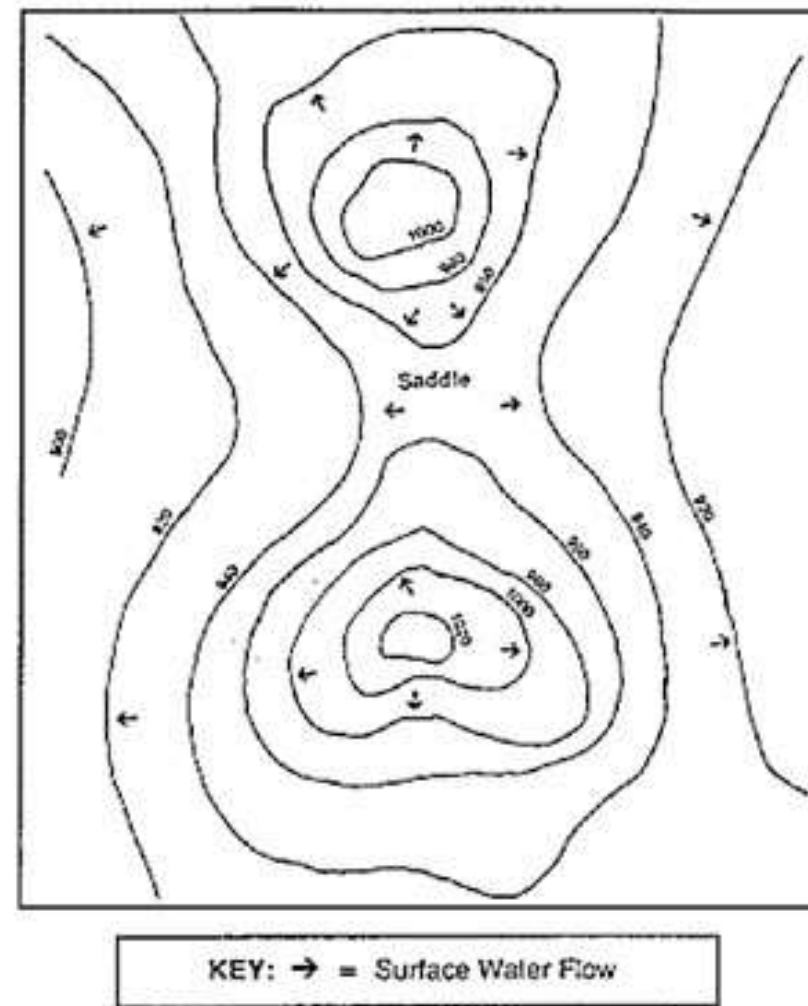
Topographic maps; for example, have a scale of 1:24,000 (which means that one inch measured on the map represents 24,000 inches (2000 feet) on the ground).

They also have contour lines that are usually shown in increments of ten or twenty feet. Contour lines represent lines of equal elevation, which typically is expressed in terms of feet above mean sea level.

As you imagine water flowing downhill, imagine it crossing the contour lines perpendicularly.



- **Watershed Boundary Delineation from Contour/Topographic Maps**



The water flow is perpendicular to contour lines. In the case of the isolated hill, water flows down on all sides of the hill.

Water flows from the top of the saddle or ridge, down each side Fig.. As the water continues downhill, it flows into progressively larger watercourses and ultimately into the ocean.

Any point on a watercourse can be used to define a watershed.



As one proceeds upstream, successively higher and higher contour lines first parallel then cross the stream.

This is because the floor of a river valley rises as you go upstream. Likewise the valley slopes upward on each side of the stream

. A general rule of thumb is that topographic lines always point upstream.

In Fig. , for example, the direction of stream flow is from point A to point B. Ultimately, the highest point upstream is obtained.

This is the head of the watershed, beyond which the land slopes away into another watershed.

At each point on the stream the land slopes up on each side to some high point then down into another watershed.

Join all of these high points around the stream to have the watershed boundary. (High points are generally hill tops, ridge lines, or saddles)



Prioritization of Watersheds



In a watershed management programme, particularly in case of large watersheds, it may not be possible to treat the entire area of the watershed with land treatment measures.

Identification and selection of few areas or sub-watersheds having relatively more degradation problem, for development planning and implementation of conservation activities according to level of need and status of degradation, are required.

These few selected areas or sub-watersheds within a large watershed are called the priority watersheds. In this process, collection of sufficient bio-physical and socio-economic information is required for integrated watershed management planning.

After effectively prioritization of watersheds (sub-watersheds), a sub-watershed management plan for each priority sub-watershed is prepared in order to minimize natural and human-induced hazards and to conserve valuable resources (soil, water, biodiversity and socio-cultural aspects).

And finally, various integrated watershed management activities in the selected priority watershed (sub-watershed) is implemented.



Factors Influencing Prioritizing Watersheds



In the face of enormity of degradation problems and constraint of financial resources coupled with limitation of expertise, a scientific approach to land resource management calls for an evolution of suitable methodology for clear identification of critical areas for treatment.

Prioritization of areas into very high, high, medium, low and very low vulnerability helps in addressing the conservation and management efforts to secure maximum benefit.

Watershed prioritization is a prerequisite to operationalize any major scheme as it allows the planners and policy makers to adopt a selective approach considering the vastness of the catchment area, severity of the problems, constraints of funds and man power demands of the local and political system.

The prioritization of watersheds varies with the objectives of different schemes but the basic framework of watershed remains the same.