

APPLICATION OF THE THORNTHWAITTE WATER BUDGET TO THE HYDROLOGY OF THREE TENNESSEE WATERSHEDS

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ABSTRACT

Water budget analysis is a useful method for the study of water surplus and runoff in a drainage basin. The purpose of this paper is to apply the Thornthwaite water budget method to three selected rural Tennessee watersheds. The watersheds are the Loosahatchie River in West Tennessee; the East Fork of Stone River in Middle Tennessee; and the Little River in East Tennessee. The calculated runoff from the three watersheds, using Thornthwaite water budget methods, are compared with the measured runoff data to evaluate the validity of the water budget method and to determine the possible effects of watershed characteristics on total amount of surface runoff. The average monthly calculated runoff for the East Fork of Stone River for the 14-year period, 1972-1985, was very close to the average monthly measured runoff. The Little River in East Tennessee produced more runoff than calculated, while the Loosahatchie River in West Tennessee produced less runoff. The

discrepancy for the Little River is due to the fact that the watershed lies in an area of greatly variable elevation and precipitation. There is no immediate explanation for the Loosahatchie's discrepancy. Water budget procedure does provide a useful means for understanding the basin hydrology in this study.

This paper was not presented at the conference. Further information about the subject can be obtained by writing the author at

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