

Groundwater Recharge Estimation of Fetam Catchment in Upper Blue Nile Basin North-Western Ethiopia

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Abstract : Recharge estimation is important for the assessment and management of groundwater resources effectively. This study applied the soil moisture balance and Baseflow separation methods to estimate groundwater recharge in the Fetam Catchment. It is one of the major catchments understudied from the different catchments in the upper Blue Nile River basin. Surface water has been subjected to high seasonal variation; due to this, groundwater is a primary option for drinking water supply to the community. This research has been conducted to estimate groundwater recharge by using fifteen years of River flow data for the Baseflow separation and ten years of daily meteorological data for the daily soil moisture balance recharge estimating method. The recharge rate by the two methods is 170.5 and 244.9mm/year daily soil moisture and baseflow separation method, respectively, and the average recharge is 207.7mm/year. The average value of annual recharge in the catchment is almost equal to the average recharge in the country, which is 200mm/year. So, each method has its own limitations, and taking the average value is preferable rather than taking a single value. Baseflow provides overestimated result compared to the average of the two, and soil moisture balance is the list estimator. The recharge estimation in the area also should be done by other recharge estimation methods.

Keywords : groundwater, recharge, baseflow separation, soil moisture balance, Fetam catchment

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