

## Hydrology study of upper awash basin to evaluate the groundwater recharge, north western Ethiopia

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Ethiopia is implementing a policy which is agricultural development lead industrialization and considers the potential water resources as an entry point for any development interventions. Based on this, the country has defined a number of development corners of intensified agricultural practices. Among the others, the Upper Awash Basin is the potential area for agricultural practices. With this context the research paper addressed the hydrology study of the area for the purpose of ground water potential assessment. In areas like Upper Awash Basin in which surface water resources are scarce, groundwater is the primary option for both domestic and agricultural water demand. Therefore, the research objective was to conduct hydrological study mainly evaluation of the major water balance components in the study area. As availability of hydrogeological data were limited for groundwater balance analysis, important data like annual and monthly groundwater recharges were estimated using (Thornthwaite-Mather, 1955, 1957) methods. The study was conducted at fourteen sub basins of Upper Awash Basin which are located at the western escarpment of the Great East African Rift System in between the western plateau and the Afar depression. In this study, hydrological and hydro metrological data were analyzed and soil moisture accounting method was employed for the separate watersheds so as to account the ground water potential of the area. The water balance evaluation and conceptualization of the streams' flow showed that the annual rechargeable rainfall in the study area ranges from 2.54 % to 14.44%. The proportion of water that recharges to the local aquifer is 10.26% of the total rainfall. Most of the rainfall lost to the atmosphere as actual evapotranspiration that accounts 70.65% of the total rainfall in the area and 19.09% of total annual rainfall is direct runoff.

### Biography

Tibebe Belete Tigabu is a lecturer in University of Gondar at the department of Water Resources & Environmental Engineering, Gondar, Ethiopia. He has got his M.Sc. in Hydrology & Water Resources Management in 2008, B.Sc. in Geology in 2004 at Arba Minch University and Addis Ababa University, Ethiopia respectively. He also participated an international training in Technology for Integrated Water Management, Belgium and Global Warming & Sustainable Water Management, Germany. Mr. Tibebe has extensive experience in water related practical works, like investigation, design and supervision of water schemes. He has good experience in teaching at higher institutions like teaching Groundwater Hydrology, Integrated Watershed Management, Environmental Hydrology, Natural Resources Management & Analysis, Environmental Impact Assessment and, involving in community service activities, consultancy and research works at university of Gondar and Ariba Minch University, Ethiopia with particular reference to water resources like groundwater hydrology and environmental issues. Mr. Tibebe has been involved in different leadership works. He was the Coordinator for Rural Water Supply, Sanitation and Hygiene program Assisted by World Bank and Team leader of Water Resources Development office in Simada Area, Ethiopia from September 2005 to October 2006.

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