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## **Assessment of groundwater reserves in Arusha city aquifer using a groundwater potential model**

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The surface water resources of Arusha city are meager and the city is principally dependent on groundwater for its water supply. Currently the water supply for Arusha city which is sourced from springs, river intake and wells does not meet the demand, due to rapid population growth and the industrial development/urbanization. The sources comprise of wells, i.e. 41.7%, springs, i.e. 57.3% and river intake, i.e. 7.0%. Over the years, the groundwater exploration has focused singularly on boring wells to get water of which excessive abstraction caused lowering of groundwater table in the wellfield but no studies have been done on assessing the groundwater potential zones of the city. The objective of this study is to assess the Arusha city groundwater reserve by mapping the groundwater potential zones and estimating the reserves. Groundwater Potential model, a modified DRASTIC model was used to map groundwater potential zones as well as potential borehole yield estimation. The model uses spatial data (Raster format) in Geographical Information System (GIS), where hydrogeologic parameters are analyzed to produce grid overlays. Determination of groundwater reserves and aquifer characterization were done also in ArcView (GIS) environment. A Groundwater Potential map produced categorizes groundwater yield as very high, high, moderate, low and very low showing alluvial plains and red soils areas having very high groundwater yields. Total available groundwater reserves was estimated as 131,981 Million m<sup>3</sup>/year while estimated groundwater yields from the model and actual borehole yield data are 1164.02 and 1088.16 Million m<sup>3</sup>/year respectively.