

GROUNDWATER POTENTIAL EVALUATION IN A TYPICAL HARDROCK TERRAIN USING GRRAT INDEX MODEL

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ABSTRACT

Geological and geophysical surveys had been carried out in parts of Alagbaka area, Akure, southwestern Nigeria, with the aim of evaluating the groundwater potential using the **G**eology of the study area, **A**quifer **R**esistivity, **B**edrock **R**elief, **A**quifer type and **T**hickness (GRRAT) index model. Geological and hydro-geophysical data were used to generate five thematic maps for **G**eology, **A**quifer **R**esistivity, **B**edrock **R**elief, **A**quifer type and **T**hickness (GRAT) of the aquifer units in the study area. GRRAT ratings were obtained based upon a calculation of weight and range of each of the parameters. They were used to develop the GRRAT index map of the study area. The GRRAT index model map generated for the study area showed that the very low, low, moderate and high groundwater potential zones cover about 15%, 45%, 35% and 5% respectively of the investigated area. This study concludes that the GRRAT index model can greatly increase the success rate of drill borehole projects and can also be a useful tool in the decision making process for groundwater development in a typical hard rock terrain.

KEYWORDS: Geology, Geoelectric, GRRAT Index, Groundwater Potential, HardRock