CHEMICAL COMPOSITION OF WATER RESOURCES OF PART OF GWAGWALADA AREA CENTRAL NIGERIA

BY

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ABSTRACT

This research study is aimed at determining the chemical composition of both surface and groundwater in part of Gwagwalada town that falls between longitude $7^0$3'00"E and $7^0$6'00"E and latitude $8^0$56'00"N and $8^0$57'00"N. Geological studies were undertaken using a topography map of the area on a scale of 1:25,000 enlarged from Abuja Topo Map (sheet 207 Kuje NW). Geological mapping was conducted using the traverse method. A Compass Clinometer was employed for the exercise as well as a Global Positioning System (GPS). Twenty-seven (27) water samples were collected from wells, boreholes and rivers. The sampling was designed to cover the entire area using a systematic random sampling method. Physical parameter of Temperature, pH, Conductivity, Turbidity and Salinity were determined in situ. Laboratory method employed for analyses were turbidimetric, phenanthroline, Flame Photometer, Argentometric, and Cadmium Reduction methods. The results were interpreted using various methods mostly Microsoft Excel for Graphs and Charts, Surfer 8 for contouring and Piper and Stiff plots for hydrochemical interpretations. The area is basically underlain by granite Gneiss Rock. The mean Temperature, Conductivity, Dissolved Oxygen, Salinity and Turbidity of the Water are 30.95^{o}C, 797.29pscm^{-1}, 5.46mg/l, 515.9mg/l and 8.68NTU respectively. The parameters with the highest concentration are Chloride and Calcium ions whose mean values are 123.22mg/l and 49.15mg/l respectively. The water generally, classifies as Calcium Magnesium Sulphate Chloride Water with the Piper plot interpretation while the Stiff plot indicated water fall within Group I whose primary cation is Calcium and Magnesium and anion are Chloride, Sulphate and Bicarbonates. The concentrations of sample from boreholes compare with Nigerian Quality Standard for Drinking Water (NIS 554:2007) falls within limits.

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