

## Geochemical Evaluation Assessment of Groundwater in Selected Part of Benue State Southern, Nigeria

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**Abstract :** Groundwater is the principal source for various uses in this study area. The quality and availability of groundwater depend on rock formation within the study area. To effectively study the quality of groundwater, 24 groundwater samples were collected. The study was aimed at investigating the hydrogeochemistry of groundwater, and additionally its suitability for drinking and irrigation purposes. The following parameters were analyzed using the American Public Health Association standard method: pH, turbidity, Ec, TDS,  $Mg^{2+}$ ,  $SO_4^{2-}$ ,  $NO_3^-$ ,  $Cl^-$ ,  $HCO_3^-$ ,  $K^+$ ,  $Na^+$  and  $Ca^{2+}$ . Results obtained from Water Quality Index revealed that the groundwater sample fell within good water quality that implies that groundwater is considered fit for drinking purposes. Deduced results obtained from irrigation indices revealed that Permeability Index (PI), Soluble Sodium Percentage (SSP), Sodium Percentage (Na %), Sodium Absorption Ratio (SAR), Kelly Ratio (KR), Magnesium Hazard (MH) ranges from 0.00 to 0.01, 4.04 to 412.9, 0.63 to 257.7, 0.15 to 2.34, 0.09 to 2.57 and 6.84 to 84.55 respectively. Findings from Total hardness revealed that groundwater fell within soft, moderately hard and hard categories. Estimated results obtained from CSMR, RI and LSI showed that groundwater showed corrosion tendency, salinization influenced groundwater at certain sampling points and chloride and sulfate unlikely to interfere with natural formation film.

**Keywords :** water, quality, suitability, anthropogenic, Nigeria

**Conference Title :** ICWWSEM 2022 : International Conference on Water, Waste and Sustainable Energy Management

**Conference Location :** Montreal, Canada

**Conference Dates :** May 23-24, 2022