

Suitability of Groundwater in Al-Saqy project, Karbla, Iraq for irrigation uses.

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- **Abstract:** Groundwater suitability for irrigation uses in the Al-Saqy project in the west part of the Holy Karbala is determined by analyzing groundwater samples of 12 wells distributed in the area, for two periods. Results indicated that all water samples are colorless, salty taste and with rotten egg smell that may be caused by the effect of hydrogen sulfide, brackish to salty water, also the samples are classified as mineralized water due to the salinity, on the other hand the groundwater in the studied area is classified as very hard water depending on the total hardness values. The mean ion concentrations for two periods indicate that all major ions are higher than water quality standards for drinking purposes according to WHO, 2011 and IQS, 2009, except for Na⁺ ions. The predominant salts CaSO₄. The predominant water types are "Normal earth alkaline water with prevailing sulphate or chloride". After comparing the ionic concentrations with the water quality standards for irrigation purposes, it is suitable for growing most types of crops, also its suitability depending on the sodium adsorption ratio (SAR), Soluble Sodium Percentage (Na%) and the Residual Sodium Carbonate (RSC).
- **Keywords:** Groundwater, Holy Karbala, Earth alkaline water, Residual Sodium Carbonate