

Hydrogeological and Hydrochemical Studies on the Delta of Nuwieba City, South Sinai

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The delta of Nuwieba City comprises Wadi Watier, Wadi Sada El - Sainra and Wadi El Sada El -Bada deltas from north to south. These wadis outlet to the Gulf of Aqaba. In this study thirty two drilled and hand dug wells are present in this delta reaching to the aquifer at variable depths. The direction of water flow takes the northwest and southeast directions and the water level decreases at the same direction. In this study ten isoparamters maps are constructed to show the horizontal distribution of the concentration of major cations and anions in the Quaternary aquifer. Hydraulic paramnertes of the aquifer in the hand dug wells are measured and show transmissivity ranging from 19.2 to 28.5 m^2/day and storage coefficient ranging from 2.8×10^{-2} to 4.4×10^{-2} . The water type in the study area is Mg CL2 type of marine water genesis except in some wells in delta of Wadi Sada El-Samra and delta of Wadi El-Sada El-Bada it is $Na_2 SO_4$ type of meteoric water genesis, because it lies at the same main trends of these faults which constructed Wadi Sada El-Samra and Wadi El-Sada El-Bada. The hydrochemical computer program WATEQ was carried out to calculate the saturation indices for all minerals in the water samples. The saturation indices of these minerals are used to elucidate the water-rock and water-mineral interactions phenomena in the studied area. The results of this program, gave 18 minerals for the samples with special concentration according to the chemical characteristics for these samples. These resulting minerals are classified to carbonate minerals, chloride minerals sulphate minerals and hydroxyl minerals according to acidic radical and basic radical. Two hydrochemical profiles were constructed to show the water rock interaction and water minerals interaction, which gave indication that, the concentration of salts increased with water flow direction.