



Using ER To Evaluate The Salt-Water Invasion Through The Groundwater Reservoir At The Egyptian Rafah, Sinai Peninsula, Egypt

Abdalla Mohamed (1,,), hatem mekhemer (,,), Magdey Atyia (,,)

(1) National Research Institute of Astronomy and Geophysics, NRIAG, Geoelectric and Geomagnetism, Cairo, Egypt (tarakhan66@hotmail.com), (,) National Research Institute of Astronomy and Geophysics, NRIAG, Geoelectric and Geomagnetism, Cairo, Egypt

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M. A. .Abd Alla , Hatem M. Mekhemer and M. A. Atyia

Abstract

The coastal aquifers are facing the problem of water quality deterioration. This happen when the aquifer balance is disturbed by man made. Unbalance means that the amount of discharge exceeds the amount of natural recharge leading to compensation by sea water intrusion. Generally two mechanisms for sea water intrusion are recognized, one by direct invasion and the other by upconing from the under laying mineralized aquifer. The study area the excessive pumping lead to sea water intrusion by upconing from the underlying miopliocene aquifer due to the presence of barrier of clay prevent direct sea water invasion. In our study the Electrical resistivity geophysical method used to trace the extent of sea water intrusion.

As a part of the national duties of the National Research Institute of Astronomy and Geophysics and Water Resources Research Institute (WRRI), National Water Research Center (NWRC), Egypt, to share in the developing regime; 60 geoelectric VES's using Schlumberger configuration were conducted on the Egyptian Rafah to evaluate the effect of the Sea water invasion in the underground reservoir. The measurements have been done using the SYSCAK R2 system from IRIS Co. The VES's are distributed on eight geoelectric sections covering the area. The collected data was interpreted, mainly, manually; since the ground surface is rough and computer processing might be inconvenience. The results figured out a map of the water distribution and the salt invasions.