



Integrated geophysical methods to delineate the contamination

Mohamed Abd El Aal Abd Alla

Dr. M. A. Abd Alla , tarakhan66@hotmail.com

Integrated geophysical methods to delineate the contamination Groundwater in the Dahshur area, south Giza, Egypt.

By Mohamed Abd El Aal Abd Alla

Abstracts: Dahshur is located in the western bank of the river Nile about 8km to the famous Saqqara area. The contamination of groundwater and its subsequent influences on the quality of the surface water is the main environmental problem in Dahshur area where several thousands of people are currently living there. The seepage of irrigation water, sanitary water, and other domestic water are the main causes for the contamination in this area. In order to assess the extent of groundwater quality, it is necessary to understand the near surface setting and the groundwater conditions of the Dahshur area. A geophysical investigation in the form of 1-D (vertical electrical sounding) & 2-D resistivity imaging and time domain electromagnetic soundings were conducted. Additionally, a chemical analysis of some water samples collected from canals and some dug wells was carried out. Based on the results of the geophysical surveys and the analysis of water samples, the shallow subsurface was categorized into four layers. The third layer is considered the quaternary aquifer under the cultivated area. The analysis of water samples reveals that the T.D.S ranges from 512ppm to 9741ppm. The water type is sodium chloride and sodium bicarbonate and it is considered meteoric water. Moreover, the geoelectric cross-section shows that TEM technique is superior in this study; it had reached a greater depth of investigation and could penetrate the deeper clay layer. Keywords: Groundwater contamination, resistivity, TEM, Dahshur, Egypt