SHALLOW GEOELECTRICAL STUDIES FOR THE LATE QUATERNARY AND DEFUNCT CHANNELS AT SAMANNUD AREA, NILE DELTA, EGYPT

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The present geoelectric resistivity survey is carried out at Samannud area in the middle of the Nile Delta, to the west of Damietta branch. This area is delimited by latitudes 31^0 2` and $31^0$ 54`N and longitudes 31^0 14`and $31^0$ 20`E covering an area of about 120km^2. Samannud area includes three famous historical towns. These towns are Sebennytos (present day Samannud), Pr-Hebeit (presently Behbeit El-Hagara) and Busiris (Abusir Bana). One hundred thirty three (133) Schlumberger vertical electrical soundings (VESes) along 17 profiles covered the area. The sounding curves are interpreted using ATO (Zohdy, 1989) and Resist (Velpen, 1988) automatic programs. Ten VESes have been conducted nearby 10 boreholes in the study area with the aim of correlating the VESes results with their lithological and hydrological information. Based on the interpreted resistivity data, geoelectric cross-sections, an isopach map for the Nile clay-silt cap and paleotopographic contour map for the Late Pleistocene sandy aquifer as well as the defunct channels are delineated. The geoelectric cross-sections and maps reveal that, two main lithological units are present. The above unit consists of clay and silt and is correlated to Bilqas Formation, that has an average thickness of about 20m in the study area. This unit is subdivided geoelectricaly into two zones, aeration zone and moisture zone. The first geoelectrical unit (Bilqas Formation) rests on an irregular surface of the Pleistocene sandy aquifer of the Nile Delta. Two SW-NE defunct channels related to the Bocolic and Sepennytic Nile branches are traced between Abusir Bana and Behbeit El-Hagara. These rivers were the waterways used to ship the large granitic blocks and columns, that were used for building the temples at Behbeit El-Hagara, Samannud and Abusir Bana.

The resistance survey with the Geoscan RM-15 resistance meter was carried out using twin electrode array at the two archaeological sites of Behbeit El Hagara Temple and El-Kom El Akhder in the study area. This survey has successfully located a number of anomalies (scattered archeological features) at the two investigated sites. These results will guide for any future excavated plans at these sites.