Investigation of the groundwater aquifer by resistivity method at Dengkil, Malaysia

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Abstract

Dengkil, Selangor, is one of the most important agricultural areas in Malaysia. Recently, this region has become steadily more and more industrialized. An increasing number of industries together have lead to increased stress on groundwater supplies. Resistivity method was used to investigate and delineate a groundwater alluvial aquifer in the Dengkil, Selangor state. The electrical resistivity imaging surveys conducted to measures and maps of the resistivity subsurface materials. This method is applicable for the identification of subsurface formations, groundwater zones, groundwater salinity and anthropogenic contamination. A Wenner electrode array was used for the field surveys, with lengths ranging from 300 to 400 m depending on the space available in the field and electrode space of 5 m in order to achieve good vertical resolution as well as clear images for groundwater and sand-clay boundaries as the horizontal structures. ERI survey was performed using the ABEM Terrameter SAS 1000 with a multi-electrode switch system with 64 channels. The field survey was carried out successfully along three lines providing continuous coverage. The resistivity imaging results show that the upper layer is clay and the second layer is an aquifer. Borehole data indicate that the aquifer layer consists of coarse sand with some gravel, after this aquifer layer is consists of bedrock (Kenny Hill Formation). The Kenny Hill Formation consisting of monotonous sequence of interbedded shale, mudstones and sandstones.