

Designing Aquifer Model for the Banks of the Serayu River, Sokawera, Somagede, Banyumas, Indonesia by Means of 1D-Electrical Resistivity Data

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Abstract	<p>A geoelectric survey using the 1D-electrical resistivity method was applied to design a groundwater aquifer model for the banks of the Serayu River in Sokawera Village, Somagede District, Banyumas Regency, Indonesia. The aim of this research was to identify the characteristics of aquifers in the research area based on resistivity log data. Acquisition, modeling, and interpretation of resistivity data were carried out and the results were lithological logs at seven sounding points. Correlation between the lithological logs resulted in a hydrostratigraphic model. This model is composed of several hydrological units, i.e. shallow aquifer, aquitard, and deep aquifer. The shallow aquifers are composed of sandy clay (10.81-18.21 Omega m) and clayey sand (3.04-7.43 Omega m) with a depth of groundwater from the water table to 27.51 m. The deep aquifers are composed of sandstone with variation of porosity (2.24-12.04 Omega m) at a depth of more than 54.98 m. Based on this model, potential shallow aquifers were estimated to be at sounding points Sch-5, Sch-6, and Sch-7. This hydrostratigraphic model shows that the two types of aquifers are separated by an aquitard layer, allowing groundwater infiltration from the shallow aquifer to the deep aquifer and vice versa. Moreover, the Serayu riverbanks in this research area are estimated to be a groundwater discharge area.</p>
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