

Geometry Of Aquifer Based On Geophysics and Hydrogeology Data in Jatinangor, Sumedang, West Java

*Gisca Gia Frini¹, Mohammad Sapari Hadian¹, Undang Mardiana¹, Muhammad Kurniawan Alfadli¹

1.Geological of Engineering Faculty, University of Padjadjaran

Water is one of the essential requirements for society nowadays. Jatinangor is an education area that has rapid development. Rapid development has many impacts to water demand which is increasing year by year. The main issue is about the situation of groundwater in Jatinangor is growing crisis. Therefore, Jatinangor is feasible to do the research to know the causes and the suggestion for groundwater resources.

This study aimed is to find out the position of the aquifer at a certain depth and determine the condition of the subsurface based on geophysics and hydrogeology data. After that, geophysical and hydrogeology data are correlated that could be a model geometry of aquifer. Based on the geophysics data, there are 60 points geoelectric around campus University of Padjadjaran which is have three classifications of the resistivity range such as low resistivity (0-60 Ohm-meter) for tuff, medium resistivity (61-100 Ohm-meter) for pyroclastic flow breccias, and high resistivity (101-571 Ohm-meter) for pyroclastic fall breccias. These rocks are distributed on 0 meter until 125 meter. Schlumberger method is used for this research.

Based on the hydrogeological data include hydrogeology mapping and 4 wells, the research area have four system aquifer are aquifer 1, aquifer 2, aquiclude, and aquitard. The analysis from 4 wells correlation showed that the Self-Potential (SP) Logs can be seen that the Self-Potential value of tuff is 0-10 mV and Self-Potential value of breccia is -10 to 0 mV. Overall, geometry of aquifer is divided into three packages of aquifer system based on the similarities of the resistivity at different depths, Package 1 on 90-180 meters has pyroclastic flow breccias and the thickness is 100m as an aquifer 2, Package 2 on 10-90 meters has pyroclastic fall breccias and the thickness is 70m as an aquiclude, Package 3 on 0-10 meters has clay soil and the thickness is 10m as an aquitard. From the analysis, it is known that the research area still have good potential for groundwater resources but the government must have rules for the urban planning and do reforestation to increase the quality of groundwater resources.

Keywords: aquifer, geometry, Jatinangor