Revisiting hydrostratigraphy in Bandung-Soreang Groundwater Basin: a well-logs re-analysis

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Abstract
An attempt to revisit the hydro-stratigraphy of Bandung-Soreang Groundwater Basin (BSGB) has been done based on 111 well-logging data. Transformation of resistivity values from well-log data to relative porosity and permeability used Chillingarian approach and Baker and Hughes Atlas of log responses. Then boundary marker was drawn to separated different aquifer layers.

Simple linear regression equations were derived from the transformation: (a) tuf layers: \( \theta = -0.0023 \rho + 2.5619, \mu = -63.514 \theta + 167.38, \) and \( \sigma = 22.912 \mu - 238.78, \) (b) clay layers: \( \theta = -0.0181 \rho + 2.6281, \mu = -61.842 \theta + 163.91, \) and \( \sigma = 5.1202 \mu - 11.503, \) (c) sand layers: \( \theta = -0.0078 \rho + 2.5992, \mu = -60.75 \theta + 161.02, \) and \( \sigma = 394.35 \mu - 2156.8. \)

Based on the new aquifer taxonomy, as many as three hydro-stratigraphic units (HSU) and six sub HSU have been defined. UHs
1 is the top layer of the BSGB, located at elevation above 650 masl. It has three sub HSU that consists of tuf and sand. The permeability (K) values of this unit range from 0.0014 to 0.1 m per day. HSU-2 with two sub HSU consists of tuf and sand, located at elevation from 625 to 650 masl. This unit has K values from 0.1 to 6 m per day. HSU-3, which is located at elevation from 500 to 625 masl, has only one sub HSU. This unit consists of tuf, sand, and volcanic breccias, with K values from 0.3 to 7.1 m per day.

Keywords: hydrostratigraphy, Bandung-Soreang, groundwater basin