

ABSTRACT

This research was conducted in Gondoriyo, Ngaliyan, Semarang City, which is a residential development planning area. In the area, water seepage was found in the form of puddles that need to be analyzed further. This study aims to identify the subsurface lithology and determine the presence of water-saturated zones and flow directions that act as groundwater seepage pathways using 2D resistivity geoelectric method with pole-dipole configuration. Measurements were carried out on six tracks, each 64 meters long with an electrode spacing of 2 meters. The results showed that the subsurface lithology consists of three main layers. The first layer is saturated clay with a resistivity value of $0.029 - \leq 11.6 \Omega m$. The second layer is tuffan sand with a resistivity value of $11.6 - 49.7 \Omega m$. The third layer is breccia with a resistivity value of $49.7 - 172 \Omega m$. The water-saturated zone is interpreted as a saturated clay layer with low resistivity values ranging from $0.029 - 4.59 \Omega m$. The existence of the water-saturated zone is more dominant and thick in the fourth zone, which is located in the East-South part of the cross section, more precisely in the East to Southeast area flanked by tracks 2, 3, 4, and 5. The direction of water flow follows the elevation difference, flowing from north to south as seen in the 2D resistivity cross section at the measurement location.

Keywords: 2D geoelectricity, resistivity, water saturation zone, lithology, Ngaliyan, water seepage, pole-dipole.