Impact of Seawater Intrusion on Freshwater Quality in Coastal Area of South Kalimantan

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Abstract

Climate change and sea level rise as both have the potential to affect saltwater intrusion into the coastal area. The aim of this study is finding seawater influence on coastal area freshwater. To this purpose, it is conducted study of groundwater aquifer as freshwater and its electrical characteristics by electrical resistivity survey in the coastal area of Muara Asam-Asam Village, South Kalimantan. It channeled from three different positions to find its impacts on the well water quality. The data Interpreted and analyzed based on the two-dimensional mapping of the distribution of subsurface Resistivity values. At a distance of 100 m from the shoreline, it experienced intrusion at a depth of 1.24 – 9.68 m with a thickness of 8.44 meters with resistivity values 1.17 – 4.20 Ωm. Furthermore, at a distance of 200 m from the shoreline, it experienced intrusion at a depth of 0.80-5.14 m with a thickness of 4.34 meters with a resistivity value of 0.26-4.70 Ωm. Finally, at a distance of 300 m from the shoreline is free of seawater intrusion. Meanwhile, the physical parameter of well water as freshwater and water consumption conducted to monitor water quality for the settlement around the area. Mean value of physical parameter of well water for TDS, level of turbidity and pH are 124.03 mg/L, 5.80 NTU and 6.80 respectively. Both TDS and pH are meet health requirements, but it is not for turbidity level value.

Keywords: seawater intrusion, coastal area, freshwater, electrical resistivity, physical parameter, water quality.