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Groundwater in Fractured Granite in Selangor

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The importance of fractured rock aquifers in the water supply issue vary according to region and depends on many factors, especially water supply and demand in the region. The study area includes factories in Selangor that use groundwater resources to meet their daily activities. This study is conducted to characterize the aquifer properties of the area. Well log and pumping test data using constant discharge test, step drawdown test and recovery test methods are analyzed to study their effects on the aquifer in study area. The interpretation made involves 16 wells with depths ranging from 16.75 m to 161.2 m. The results of this study show that the study area is predominantly composed of confined aquifer. Well log analysis indicates the presence of two major layers in the study area which are residual soil layer consisting of weathered granite material such as sandy clay and bedrock layer which is granite. This permeable layer of sandy clay acts as an aquitard which stores water that infiltrated from the surface. Meanwhile, the bedrock layer is fractured granite which acts as water bearing zone. Granitic rocks in study area is generally fractured at various depths. Pumping test analysis gives the transmissivity values, T ranged from 2.6 m^2/day to 36.1 m^2/day that are classified as low to moderate. The range of hydraulic conductivity, K is from 0.06 m/day to 4.68 m/day, which is interpreted as high. Wells in study area has a moderate productivity with an average discharge rate of 7.3 m^3/h. Granite rock aquifers generally have low water bearing potential. However, the presence of fractures in the aquifer has helped increase its productivity and efficiency.

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