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The scale-dependent of hydraulic conductivity through pumping test in alluvial aquifer with high permeability

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Pumping test was conducted to understand hydraulic conductivity for leaky confined aquifer with high permeability. Test aquifer was formed in 25∼35 m below ground surface at predetermined site of riverbank filtration which junction of Nakdong river and Miryang river in the Ttaan isle, Gimhae city, Korea. Pumping well (PW) and 6 monitoring wells (MW1, MW2, MW3, MW4, MW5 and MW6) were developed in test site. MW1 and MW4 wells were located at 5 m from pumping well, MW2, MW3, MW5 and MW6 wells were located at 2 m from pumping well. MW1 and MW2 wells are located at south-west direction, MW3 and MW4 wells are located at north-east direction, MW5 well is located at North-west direction and MW6 well is located at South-east direction based on pumping well. Pumping test was conducted for constant pumping rate of 2,500 m^3/day, recovery test was conducted for PW well after completion of pumping test. Hydraulic conductivity through pumping test was estimated to be 1.745×10^{-3} m/sec for PW well, 2.575×10^{-3} m/sec for MW1 well, 2.076×10^{-3} m/sec for MW2 well, 2.271×10^{-3} m/sec for MW3 well and 2.591×10^{-3} m/sec for MW4 well. Hydraulic conductivity through recovery test was estimated to be 1.603×10^{-3} m/sec for PW well. And, leakage of confining layer was confirmed by groundwater level displacement of 0.06 m for MW5 and MW6 wells at pumping test. Radius of influence during pumping test was estimated by Thiem equation used transmissivity, maximum groundwater level displacement, distance form pumping well and pumping rate as parameters. Estimated Radius of influence was 7.148 m for south-west direction, 6.193 m for north-east direction based on PW well as difference within 5% each other. The function of hydraulic conductivity as mea-

surement distance was estimated to be for south-west direction, north-east direction. Both of functions of hydraulic conductivity as measurement distance were similar, scale-dependent of hydraulic conductivity was occurred as variation of measurement distance.