

Groundwater contamination caused by level change of groundwater and subsidence in alluvial aquifer, Yangsan, Southeastern, Korea

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Ground subsidence taken place during pumping in Yangsan, Korea is attributed to sediment compaction which is related to a decrease of thickness in sediments of alluvial aquifer. Yangsan city is located along the Yangsan Fault, one of the most attractive major faults in the southeastern part of Korea because of its importance tectonic movement and activity. This area is characterized by wide alluvium composed of sand and gravel, developed along the Yangsan fault. Microstructural studies on fault gouge in this area show that clay minerals such as illite, chlorite, and smectite have well grown under the influence of hydrothermal alteration in the matrix of the fault gouges and define clay foliations with parallel alignments. NO₃-N, Br, Cl, Fe, Al and organic contaminants were found in groundwater due to infiltration from surface to the aquifer, suggesting that permeability is relatively high in the alluvial aquifer. The investigation of groundwater recharge and laboratory tests, along with field tests, were carried out. Especially, information of the bed structure based on the data of water level and the data of well logging was used as input data of the analysis program for ground subsidence. The ground subsidence with below 0.3 m is predicted to have occurred with the change of water level, even though there are still some differences in bed thickness. Therefore where there are development of groundwater and treatment for soft ground, the rate of ground subsidence according to the drawdown of water level should be taken into account for the design and construction of groundwater wells.

This study was supported by the GAIA project (contract number: 2015000530003), Ministry of Environment, Republic of Korea

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