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The assessment of water-quality and well yield for operation of riverbank filtration in field scale

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Riverbed/bank filtration (RBF) is a natural process used as a first step in drinking water treatment. Riverbank filtration systems consist of well fields that draw water from an aquifer that is hydraulically connected to surface waters. Riverbank filtration is a mechanism by which the permeable riverbed and underlying aquifer solids are used to attenuate dissolved and suspended contaminants in surface water as the water enters the aquifer and moves towards the pumping well(s).

The attenuation of contaminants is attained through physical filtering, sorption, and degradation. But more important for the sustainability of riverbank filtration was the effect of particulate organic matter which intensified clogging of the riverbed and thus reduced the well yield significantly.

The objective of this study was investigated to contaminants attenuation (BOD, COD, SS and T-P) of filtered water under field scale. In addition, to calculate of well yield by MODFLOW program data and monitoring data was compared.

The MODFLOW and field monitoring were conducted on the basis of field permeability test and geotechnical investigation. Compared to water quality of surface water, the water quality of filtered water was reduced (BOD of 50%, COD of 52%, SS of 12.1% and T-P of 52.4%). The calculation result of well yield showed that the monitoring data (696.0 m3/day) was more great than MODFLOW data (194.9 m3/day)