

Groundwater development by vertical riverbank filtration technology (RBF).

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Riverbank Filtration (RBF) is a technology that operates by pumping out water from borewells drilled along the banks of a river. During the pumping process, river water infiltrates into and passes through the riverbed sediments. When the underground passage, it can improve the quality of surface water. In 2020, the Department of Groundwater Resources (DGR) by the Groundwater Resource Regional Office 8 has established groundwater supplies by applying vertical riverbank filtration technology (RBF). The project aims to construct a large groundwater supply system and promote conjunctive use of surface water and groundwater in areas along the main river. There are two study areas in this project including the Bangpang temple in Banpong district, and the Kanon temple in Photharam district, Ratchaburi province. Both sites are located close to the Mae Klong River.

The project consists of two main phases. The first phase is to conduct geophysical and hydrogeological surveys consequently, eight surveying wells which were applied to be conservation wells. Afterward, four production wells were drilled by reverse rotary circulation drilling, and groundwater supply was designed and constructed. Each RBF system consists of two production wells (12-inch diameter), a storage tank (120 m³), a pretreatment system, a water supply station, and an Internet operation system IoT (flow rate, voltmeter, water level in storage tank, water level in production wells, CCTV for control box). The second phase is the long-term operating and maintaining of the RBF system. This phase consists of monitoring the RBF system by IoT, and monthly monitoring water level and water quality in the production well. In addition, the second phase is in progress.

Finally, this first phase can be indicated that four production wells have been drilled by reverse rotary circulation drilling can develop cooperation between groundwater and surface water over 3,000 m³/day which can supply water for people more than 2,000 households in the surrounding area. According to this cooperation supply, it can provide sustainable consumption for the future and water supply system.

Keywords: vertical riverbank filtration (RBF), reverse rotary circulation drilling, groundwater supply system.