

## **The Investigation of High Potential Groundwater for Strengthening Water Security in Sakae Raj Subdistrict, Pakthongchai District, Nakhon Ratchasima Province**

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Sakae Raj Subdistrict, Pak Thongchai District, Nakhon Ratchasima Province, has had a shortage of surface water resources for tap water production despite its downstream location. Additionally, it draws surface water from the "Lam Chiang Sa" reservoir in Udom Sap Subdistrict, Wang Nam Khiao District, and shares this resource with four other subdistricts. Therefore, people in the upstream region will rapidly pump and store the water for agricultural uses when the water is regularly released from the reservoir. But it leads to insufficient water for cultivation and domestic purpose in the arid areas downstream. Therefore, it is the responsibility of the subdistrict Administrative Organization of Sakae Raj to provide a budget for pumping the water in the "Bueng Kham" reservoir and the village's water pool to produce tap water. In addition, it is obligated to provide sufficient water resources in areas with limited groundwater to suit people's demands.

The Bureau of Groundwater Resources Region 5 (Nakhon Ratchasima) conducts the project entitled "The Investigation of High Potential Groundwater for Strengthening Water Security in Sakae Raj Subdistrict, Pak Thongchai District, Nakhon Ratchasima Province." This project consists of two main phases. In phase I, the high potential groundwater areas will be investigated, drilled, and developed into the groundwater well. Moreover, the large groundwater supply system will also be designed and customized to the local environment. In phase II, the treatment system from phase I will be constructed as well as installing the monitoring system for groundwater quality changes.

The investigation results (62 groundwater wells, 209 locations of geophysical survey, and 12 areas of exploration well with average drilling depth of 150-200 meters) from the studied and the surrounding regions found that the Khok Kruat aquifer had a groundwater yield of less than 5 m<sup>3</sup>/hour and had groundwater quality ranging from fresh to brackish. Conversely, the Phu Phan aquifer had a groundwater yield greater than 20 m<sup>3</sup>/hour and was freshwater. Especially since this aquifer is artesian, it is suitable for a large groundwater supply system. Consequently, the four production wells and one observation well were developed along with a large groundwater supply system for supplying the people's needs at a production rate of 1000 m<sup>3</sup>/day with a pumping rate of 25 m<sup>3</sup>/hour/well to avoid exceeding groundwater extraction.