

Geological and geoelectrical survey of groundwater potential in the Astaneh-Kouchesfahan plain, Iran.

Abstract

The Astaneh-Kouchesfahan Plain, an extensive and productive aquifer system in Iran, is located in the south Caspian Sea basin which is part of the Alborz tectonic range in the Alpine fold belt. A permeable aquifer system provides water for industrial, agricultural and domestic uses. Geological and geophysical studies indicate a number of important facts about the groundwater system. For this reason, detailed regional geological, tectonic and geophysical data were gathered to better understand the behavior of hydrogeological zones in the system. Geological studies show that the area is predominantly covered by recent alluvium, which consists of Pleistocene and Holocene stream deposits, coastal deposits, beach deposits and alluvial fan deposits. The bedrock mainly consists of impermeable clay of the Mesozoic era. Also, based on available geological cross sections, geophysical surveys, and well logs, it is shown that the system contains an unconfined, shallow Quaternary alluvial aquifer which is composed of heterogeneous sequences of relatively coarse grained gravel and sand interconnected with different thicknesses of silt and clay. The final results of this study are extremely useful for geotechnical activities, environmental strategies, and water resource management.

Keyword: Geological; Geoelectrical survey; Groudwater potential; Water resource.