

Geophysical Techniques to Aquifer Locating and Monitoring for Industrial Zones in North Hanoi, Vietnam

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Abstract

Geophysical methods were applied for hydrogeological targets in many countries including Vietnam. This paper presents results of using complex geophysical techniques as well as 2D electrical resistivity imaging (ERI), vertical electrical sounding (VES), very low frequency (VLF), and seismic refraction for geological structure investigation for locating the aquifers and assessing the hydrogeological conditions for groundwater potential in industrial zones of North Hanoi, Vietnam. The locations of two aquifers are determined by their depth and thickness on the basis of resistivity and seismic velocity values which were proved by stratifications of three boreholes to 40-60 m of depth on the study area. There are connections from surface water to shallow aquifer by hydraulic windows, as follows from VLF data. The deeper aquifer can be considered as a potential groundwater supply, but the water level is descending in time, as shown by hydrological monitoring. However, with careful use and by reducing sources of pollution, groundwater can continue to be an important natural resource for future.

Key words: geophysical techniques, hydrogeological condition, aquifer, industrial zone.