

An Investigation of Remediation Reagents Injection at a Groundwater Contamination Site by Using ERT and SP Method

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The treatment of groundwater contamination is complicated and difficult, especially for extensive distribution of contaminant or non-removal source of contamination. Whether the remediation reagents can effectively transmit to the target area or not is important. In this research, we combine electrical resistivity tomography method (ERT) and self-potential tomography method (SPT) to investigate the diffusion and spatial distribution of remediation reagents at a large groundwater contamination site. We inject flowable reagents near the source of contamination, and define its preferential flow pathways and diffusion direction by ERT and cross-well ERT. On the other hand, we inject non-flowable reagents at the forefront of contamination to prevent the downstream diffusion from contaminant, and image the long-term existence of injected reagents from two-weeks monitoring of cross-well ERT, 3-D ERT, and SPT. As a result, combining cross-well ERT with monitoring wells can make the wells not only for groundwater sampling and remediation, but also for geoelectrical investigation to enhance the wells' efficiency.

Keywords: ERT, SP, Resistivity, Groundwater, Pollution, Remediation