



Influence of mine drainage on regional groundwater of Shilou iron mine in Huaibei City, Anhui Province, China

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ABSTRACT

When mining in mines, it is inevitable to produce water gushing; the influence of large amount of mine drainage on groundwater is a problem that should be taken seriously. Taking Shilou Iron Mine for example, based on regional hydrogeological concept model, the numerical model of groundwater was established, which was identified by water-level simulation and crossflow rate calculation, and then the additional drawdown hydrograph was analyzed by considering whether there was water bursting. The results showed that the maximum drawdown of water level of karst water aquifer in the mining area was 0.2753 and 0.2662 m when considering two months of water inrush and normal water gushing by the end of the third year. In addition, the area where groundwater drawdown was greater than 0.2 m was within the radius of 1,500 m at the center of the pit mine, and the mine drainage was of some influence on regional karst groundwater. Furthermore, the maximum value of pore water aquifer was 0.0126 and 0.0104 m in the same case, and the drawdown funnel was roughly stable, so it had little influence on regional pore groundwater during the study period.

Keywords: Water gushing; Numerical simulation; Groundwater drawdown; Crossflow rate; Mine drainage; Pore water aquifer

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