

Abstract

In this master's thesis, a numerical model of groundwater flow in a contaminated area of Hradec Králové was created. After that, a circulation well was introduced. Two circulation well variants, which differ in the amount of pumped water, were examined. All simulations were performed with the aid of a finite element solver Feflow 5.2.

The values of hydraulic head resulting from the mathematical model are in a good agreement with those obtained from the field measurement. The groundwater flow present in the area of interest exhibits south to southwest direction. After introducing the circulation well, I focused on the influence of the amount of pumped water on the groundwater flow. The outcome of this observation was that during the higher volume pumping, the circulation cell is larger and therefore has a higher influence on the groundwater flow. I evaluated that it is more efficient to pump a higher amount of water in the investigated area.