MONITORING, PREDICTION AND CONTROL OF THE UNPROTECTED GROUNDWATER AT ONE OF WATER INTAKES IN THE NIZHNY NOVGOROD REGION (RUSSIA)

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The methodical procedures of hydrogeological investigations carried out to minimize negative changes in ground-water quality in areas of extraction and to optimize the operation of a water well are considered on the example of one of fresh ground-water fields (Teplovskoye Field) in the Central Russia. The principles for arranging a network of monitoring wells are discussed: selection of a place for well installation; quantity and design of wells, selection of parameters to be controlled.

The Teplovskoye Field has been formed at the watershed of two large rivers of the European part of Russia – Volga and Oka. It is associated to a thick strata of the Upper-Middle Quaternary alluvial-fluvioglacial sands covering the paleoriver valley. The Field accumulates unconfined ground water of commercial reserves. The exploited aquifer over the major territory is not protected against contamination, except some local sites in swampy areas and drained peat bogs. A few years before the exploitation of the Field, a monitoring of ground water, chemical composition of surface water and precipitation has been fulfilled in this region. On the basis of the results obtained a predictive ground-water transport model was constructed. The model enabled determination of basic critical spots and their parameters, the impact of which on the quality of extracted ground water must be controlled through regulation of water-intaking wells operation.