LOWERING GROUNDWATER LEVELS IN MISHKHAB CITY BY GROUNDWATER MODELING

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ABSTRACT

Mishkhab city suffers from high groundwater level, which interferes with and hampers the process of any new construction of building .Another problem raised by groundwater is prevents declension water dismissal. Therefore dewatering is necessary for lowering the water table level, which was expected to be at a depth (7-10m) below ground surface. One of the most possible methods for dewatering without causing any effect to the remnants is by pumping deep well. The design considered in this study is a ringed well system surrounding the study area .A well field is containing (5) wells distributed in area about 3.8km^2, according to its hydrogeologic and hydraulic characteristics. Each well is assumed to penetrate a depth of (100m), and discharged at a rate of (16l/s). The numerical model uses the finite difference technique based on the continuity hypothesis and Darcy's law. The analytical model is theoretically based on the Hantush analysis of interfering drainage wells in a leaky confined aquifer with the Superposition and Image principles.

Numerical simulation is conducted with the aid of a computer program (package) called (Groundwater Modeling System, GMS) to simulate the steady and unsteady states of flow. Steady state simulation showed good agreement between the computed and observed head distribution during the calibration process. Unsteady state is observed during pumping when the well field system is operated. The outcome of such condition revealed the possibility of lowering the water table level in the Mishkhab city to the required depth after one year.

KEYWORDS: Groundwater Modeling, GMS, MODFLOW, Well, Groundwater, Water Table, Aquifer, Consolidation Settlement