GLY 5826

Assignment 9:

1. Read Chapter 8.

2. Use Groundwater Vistas to solve for the recharge rate for the same (confined aquifer; i.e., not Dupuit) aquifer system and target head value described in Problem 3.2 of your textbook. You worked on this problem in Assignment 7.

Begin with an aquifer that extends to a bottom elevation of -100 and a top elevation of 100 ft. You know T and you'll have to compute K_x, $K_{y,}$ and K_z from T = Kb. b would be 100 ft at the shoreline where h = 0 ft. Insert a starting guess for R.

Add the constant head boundaries. Add the target head value. Create a ModFlow 2000 data set and run the model.

Use GV Calibration. Select the Recharge parameter, turn it on, and specify zone 1. Start the calibration. View the results. Make sure that it has worked, update the database and run the model again. Process the results and fix the contours.

3. Use MODFLOW2000 to solve the same transient problem you solved in Assignment 8.

Set the x and y spacing appropriately for the number of cells to get the correct total size. Similarly the thickness or K values must be adjusted so that T = 0.02 m^2 min^{-1}. Put in the correct storage coefficient.

Under Model, Modflow, Package Options, Basic, turn off the steady state option and change the time units to minutes and the space units to meters. Under Block Centered Flow, make the top (only) layer confined. Put in the initial heads. Then, under Model, Modflow, Stress Period Setup, choose appropriate duration and number of time steps bearing in mind the steady state is reached in about 400 minutes.

Under Model, Modflow2000, Stress Period Types, choose transient. Put in the boundary conditions. Uncheck the steady state option and provide the transient boundary heads.

Plot the results for four different times as maps and profiles. Specify what times the graphics correspond to. Add a monitoring well that measures head as a function of time. Plot its hydrograph.