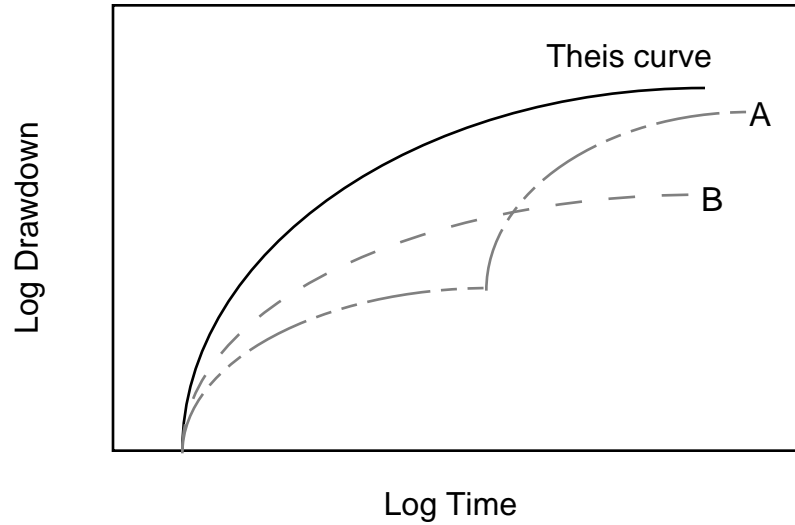


Exam II - Environmental Hydrogeology

Fall 2000

Name _____

1 - Below are three plots of time versus drawdown. The upper curve is labeled The Theis curve. Explain the shape of the other curves A and B. What do the A and B curves represent? (10 pts.)



2 - Define five (5) of the following and point out the hydrogeologic significance of each (15 pts.):

a - stagnation points

b - hydrolysis

c - till

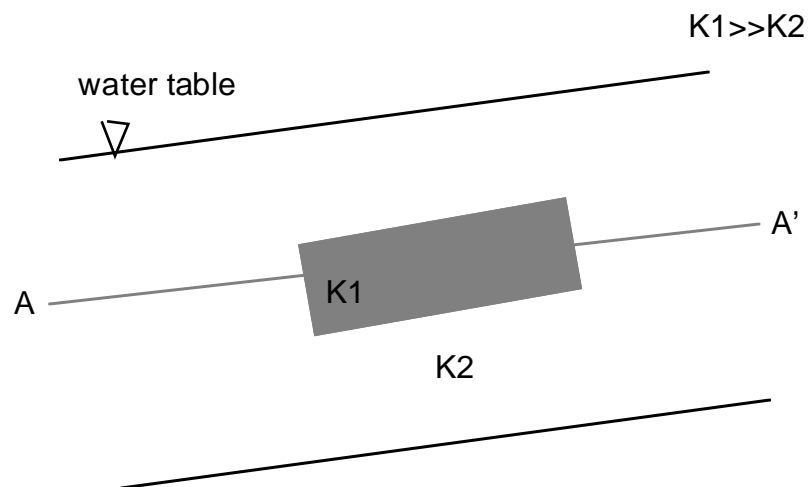
d - juvenile waters

e - formation brines

f - chemical water facies

g - hydraulic conductivity ellipse

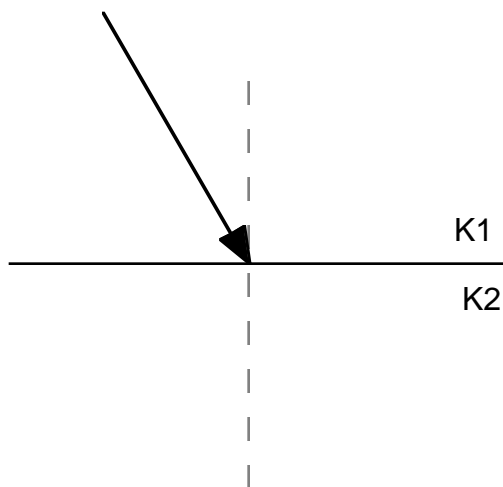
3- On the diagram below draw flow lines and equipotential lines that represent flow around and through the highly conductive K1 material within this water table aquifer. Assume there is a set of piezometers completed along line A-A' sketch how a potentiometric profile recorded by these piezometers would differ from the water table (10 pts.)



4 - How can drawing a flow net be utilized in estimating discharge through an aquifer. Give an example for a confined and unconfined aquifer? (10 pts.)

5 - How can partial penetration of a well into an aquifer induce vertical hydraulic gradients (use a diagram)? (6 pts.)

6 - Which way would refraction occur if $K_1 \gg K_2$. Draw in multiple flow lines and equipotential lines across the interface between the materials. (7 pts.)



7- Discuss the role that topography, the length/ thickness ratio and the anisotropy ratio have in determining the relative dominance of local flow systems. Be sure to illustrate your discussion (12 pts.).

8 - Why are most natural meteoric waters acidic (5 pts.).

9 - Contrast near surface water chemistries from humid and arid regions. How may their chemistry differ and why? (7 pts.)

10 - Describe the steps used in slug testing. What advantages do these tests have over pump tests, what are the disadvantages? (10 pts.)

11. Describe the general chemical evolution of groundwater according to the Chebotarev sequence. (8 pts.)

BONUS: Assuming the election results are in by the start of class. What was the final electoral vote for Bush and Gore? exact amount (3 pts.) within 5% (2 pts.), who won (will win) (1 pt.)?