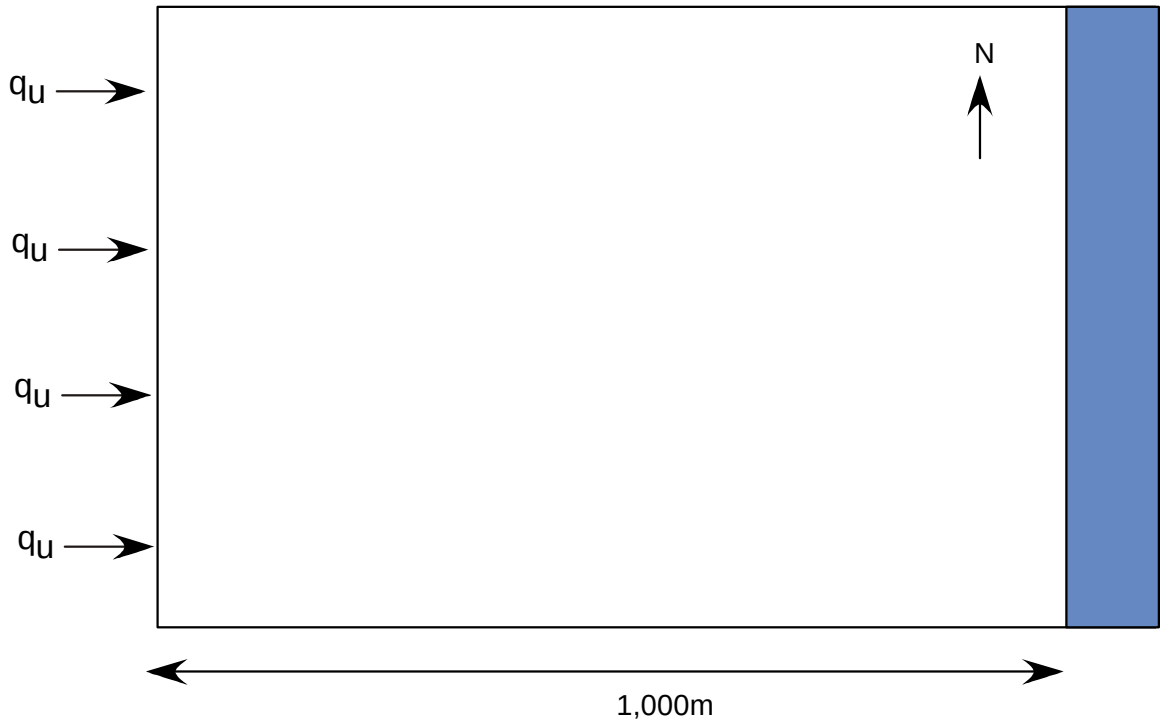
Name: _____
January 30, 2001

Introduction to Ground-Water Modeling
15-040-602

Fifth Exercise (due 2/2/01)

This problem is not in the text but we've discussed it in class several times and have derived an analytical solution for it. Our model area is a rectangle extending 1,000m in an east-west direction. It is bounded to the east by a fully penetrating river. An underflow, q_u, of 40m/day enters the model area perpendicular to the western boundary. The aquifer is confined with a hydraulic conductivity of 100m/day. As we've discussed, under these conditions, the aquifer's heads can be solved in one dimension.



1. Determine head within the model area both analytically and numerically (with SOR) and plot the results.

2. What affect does doubling the q_u have on head?

3. What effect does cutting the hydraulic conductivity by half have?

4. What effect does doubling the length of the model area have?