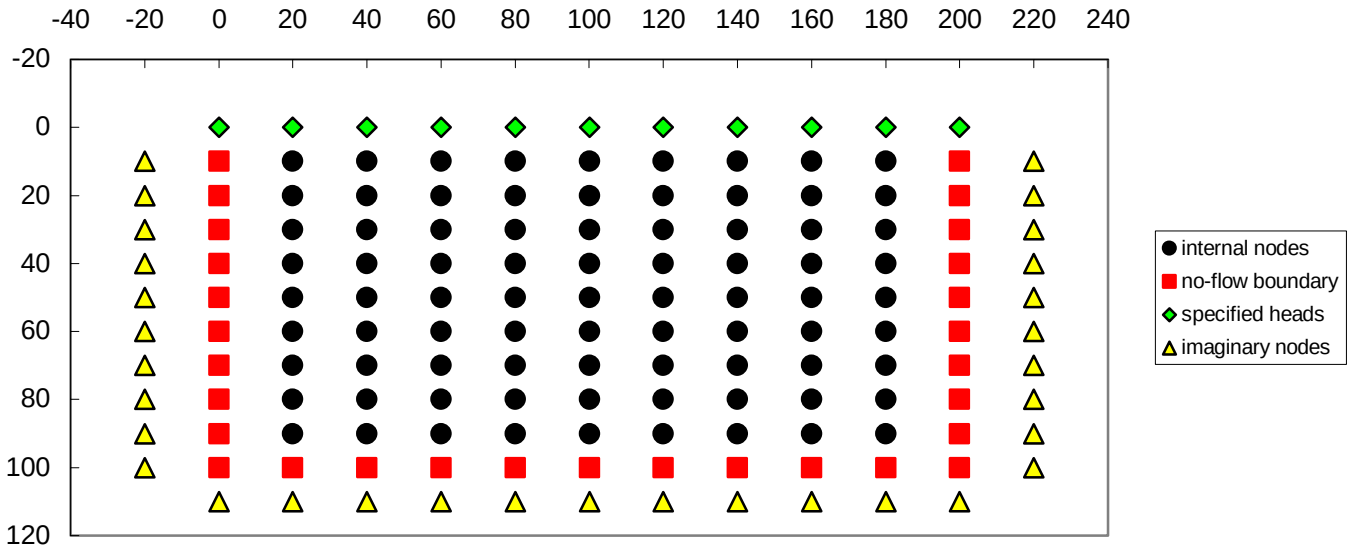
Name: _____
January 30, 2001

Introduction to Ground-Water Modeling
15-040-602

Fourth Exercise (revised 1/31/01)

This exercise is based on program 2.10 in Wang & Anderson and is discussed in detail in Chapter 3. The problem is fairly similar to the permeameter programs you've done previously. The new features are the problem domain is two dimensional and there are no-flow boundaries. The fact that the problem domain is now two dimensional should not pose a problem; the head at each internal node (black circle) should now be equal to the average of the *four* surrounding nodes rather than the *two* surrounding nodes. Calculation of head at the boundary nodes should also pose little problem. Although it may be treated more elegantly, you may set up a row and two columns of imaginary nodes (yellow triangles) just beyond the problem boundaries. Set the heads at these



imaginary nodes equal to the head at the node inside the boundary (*i.e.,* don't set it equal to the head of the boundary point). If you opt to use this approach, you can use the same equation to solve the heads at the boundary as you do to solve the head at the internal nodes.

Once you've done this, set the spreadsheet up as we did in the previous problems (an array for residuals and an array for heads at the previous iterations). Use SOR if you can.

You may plot the flow net directly on the spreadsheet but make sure you plot it without vertical exaggeration (i.e., vertical and horizontal scales are equal).

Good luck.