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HW 3

**Discussion**

1 Does the equipotential distribution depend on the absolute or relative K values for the background and the inclusion?

The relative K values have more effect on the equipotential distribution. We could test this by inputting a range of descending K values and comparing the behavior of the equipotentials.

2 Discuss what it means to say that, for steady state flow, there are equivalent Type I and Type II boundary conditions. How might this be useful in practice?

Steady state dictates no change in storage; flux in equals flux out. So, with q = -K dh/dl, setting q\_in and q\_out equal will affect the system in the same way as keeping dh constant. In real applications, one property may be more readily measured than another and being able to model a system with equivalent type of boundary can support the properties that are known.

3 What would you find if you altered your model to consider unconfined conditions?

In an unconfined aquifer there

**Glossary**

1 Flopy is a Python application that uses an executable file generated by MODFLOW to run and process a model. It is more easily alterable than working directly with MODFLOW’s .list and .bcf files (for example), but can have a prohibitive learning curve for people who are not familiar with Python.

2 A single K value per grid cell means the modeler must choose a balance between accuracy and model run time. Shrinking the cells so that a single K value is not spanning too much of the area dramatically increases the computational draw. Because of the difficulty (time, expense) of taking extensive K measurements to cover the entire area, the K values input into the model are generalizations taken to be representative of the system.

3 What does it mean for a groundwater model to be confined? How does this simplify calculations of groundwater flux? How do we specify this with cell types in MODFLOW?