

Instructor's Comments for Gallatin Regional Park Assessment Exercise

Author's update: When the exercise was first created, the park had not been developed. Today, it has been developed. For this reason there have been wells drilled in the Park. When a student goes out to look, they will find those wells. This problem does not invalidate the exercise. The students simply will find wells that are in the Park. The question the exercise is predicated upon is still valid.

I hope the html code provides you with the material you need. You may find my current version of this exercise at:

<http://www.montana.edu/uessc/esci440/subdivision.htm>

<http://www.montana.edu/uessc/esci440/gwicdemo.html>

http://www.montana.edu/uessc/esci440/l11a_specifcap.htm

The students seem to enjoy this exercise. The exercise results were really turned into the Park Commission. The students have some difficulty deciding which wells to include. Analysis using specific capacity to estimate yield is sometimes problematic, but the web page on specific capacity has helped a lot. I personally feel that the number of wells relevant to the problem is relatively small if one confines oneself to a quarter quarter section around the park. There are some tantalizing wells just outside this envelope. The problem with the well information is that well locations have not been verified. While they may be ok, recordation and other errors do occur as well as location errors.

This project may have some nice extensions if one considered the impact of the well field to produce the requested water. Does the well field impact the streams in the area? If a subdivision on a community water supply was proposed next to the Park, would the impact be significant? (What is significant?) Students could propose a drilling plan or other pump testing activities. I would not recommend doing a stratigraphic analysis because this system is alluvial valley fill in a Basin and Range listric normal faulted valley. The aquifer bodies are discontinuous, threads of gravel and sand in a matrix of silts and what the drillers call clay-bound gravel. Correlation is very frustrating.

I would like to thank Fletcher Driscoll for introducing me to specific capacity and well yield analysis, but as always, errors and omissions are mine not his.

For questions, you may contact Steve Custer (scuster@montana.edu).