

**Temporal Changes in Potentiometric Surfaces in a Karst Aquifer: Barton Springs Segment of the Edwards Aquifer, Central Texas**  
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Potentiometric maps were produced for the Barton Springs segment of the Edwards Aquifer using data collected in February 2002, November 2005, and August 2006 representing high, below average, and low flow conditions in the aquifer, respectively. These synoptic potentiometric maps document varying hydrologic conditions and stresses and contain a dense set of data (n= 166 to 231) for the relatively small portion of the Edwards Aquifer (155mi<sup>2</sup>). In many parts of the aquifer, water levels fluctuate up to 100 ft or more between the high and low flow periods. Troughs and ridges in the potentiometric surfaces correspond to preferential flow routes with significant changes in contours from one synoptic event to the next. Influences of discrete recharge and discrete discharge (pumping) are evident on the potentiometric surfaces. Potentiometric surfaces over these varying hydrologic conditions provide some insight into the dynamic nature of the southern boundary of the aquifer, and the potential for flow from other sources such as the Trinity Aquifer and the saline zone of the Edwards. Despite the high density of data used to construct these maps, some aspects of flow in the aquifer can only be determined with tracer studies. Tracer studies have identified radial and divergent flows that are not evident on the potentiometric maps. Potentiometric maps are a significant tool for characterization of the flow system in the aquifer, and when combined with dye tracing and other studies the complexity of this system can be better understood.

**Biographical Sketches**

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