805-7 Multilevel Monitoring and Characterization of the Edwards and Trinity Aquifers of Central Texas

Monday, 6 October 2008
George R. Brown Convention Center, 320ABC

Brian A. Smith *, Barton Springs/Edwards Aquifer Conservation District, Austin, TX*
Brian B. Hunt , Barton Springs/Edwards Aquifer Conservation District, Austin, TX

Because demand for groundwater in Central Texas is rapidly increasing, groundwater scientists are now studying its aquifers in far greater detail. Most aquifer parameters are determined from wells that penetrate the entire Edwards section or wells that are completed over considerable thicknesses of the Trinity. Monitoring of more discrete intervals can provide data that reflect the true complexity of these aquifers. To address these issues, the Barton Springs/Edwards Aquifer Conservation District collects data from three well pairs and has installed a multiport well with 14 monitoring zones in the Edwards, Upper Trinity, and Middle Trinity Aquifers.

Water-level data from the three well pairs show significant head differences between the Edwards and the underlying Middle Trinity, with downward head gradients. Heads in one well pair differ by as much as 160 feet. Substantial temporal changes are seen in water levels of both aquifers, with the Middle Trinity water levels lagging behind the Edwards levels by about one to two months.

Head differences between zones in the multiport well range from less than one foot to as much as 40 feet between the lowermost zone of the Upper Trinity and the uppermost zone of the Middle Trinity. Head values generally decrease with depth. Total dissolved solids (TDS) range from 292 milligrams per liter (mg/L) in an Edwards zone to 2,600 mg/L in one zone in the Upper Trinity. These significant differences in head and TDS values suggest that there is very little vertical flow between these zones in the vicinity of the well. Where nearby faults cut across the Edwards and Trinity units, there is greater potential for flow between zones. However, the large discrepancies in TDS values between zones suggest that flow along faults in this area is small compared to horizontal flow in each zone.

See more of: Environmental Geology I and Hydrology
See more of: Gulf Coast Association of Geological Societies