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Pleasant Valley Spring: A Newly Documented Karst Spring of the Texas Hill Country Trinity Aquifer

Brian B. Hunt

Brian A. Smith

Chad Norris

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South-Central Section - 47th Annual Meeting (4-5 April 2013)

39

PLEASANT VALLEY SPRING: A NEWLY DOCUMENTED KARST SPRING OF THE TEXAS HILL COUNTRY TRINITY AQUIFER

Paper No. 39-3

Presentation Time: 8:00 PM

PLEASANT VALLEY SPRING: A NEWLY DOCUMENTED KARST SPRING OF THE TEXAS HILL COUNTRY TRINITY AQUIFER

HUNT, Brian B.¹, NORRIS, Chad², GARY, Marcus³, WIERMAN, Douglas A.⁴, BROUN, Alex S.⁵, and SMITH, Brian A.¹, (1) Barton Springs/Edwards Aquifer Conservation District, 1124 Regal Row, Austin, TX 78748, brianh@bseacd.org, (2) Texas Parks and Wildlife, 4200 Smith School Road, Austin, TX 78744, (3) Edwards Aquifer Authority, 1615 N. St. Mary's Street, San Antonio, TX 78215, (4) 400 Blue Creek Drive, Dripping Springs, TX 78620, (5) Hays-Trinity Groundwater Conservation District, PO Box 1648, Dripping Springs, TX 78620

Texas Hill Country springs provide baseflow for rivers that recharge the downstream Edwards Aquifer. This study is an initial characterization of Pleasant Valley Spring (PVS) and recognition of its significance for the Hill Country, Middle Trinity Aquifer, and the Edwards Aquifer. PVS is a perennial, artesian, karst spring complex located in the bed of the Blanco River near Fischer Store, TX. Springflow issues from three sets of NW-trending fractures antithetic to regional faulting along a 450 ft reach of the river. Total springflow varied from 9 cfs (Feb 2009) to 18 cfs (Sept and Oct 2012). This accounts for 69% to 34% of baseflow measured in the downstream USGS Blanco River (Wimberley) gage, respectively. PVS is the largest documented spring of the Hill Country Trinity Aquifer system and is located 5 miles WSW along strike from the well-known Jacob's Well Spring (JWS). Both springs have similar water surface elevations (survey JWS = 922.4 ft-msl and PVS 921-923 ft-msl), and similar structural and lithologic settings. Lower Glen Rose limestone crops out at the surface at both springs, and the underlying Cow Creek formation is the source of artesian flow to JWS, and the likely source for PVS. While springs issue from fractures at PVS, JWS has a karst conduit system extending 140 deep and over 7,000 ft horizontally, formed along solution-widened fractures and bedding planes with roughly the same fracture trend as those observed at PVS. Both springs have similar geochemistry (TDS of 400 to 470 mg/L, respectively) with Ca-HCO₃ waters consistent with a mixture of Blanco River and Middle Trinity groundwater. Radiogenic isotopes for both springs suggest a mixture of modern (1.9 TU) and older (ca. 1,000 ybp; 0.86-0.91 pmC) waters. JWS has changed from a perennial to an intermittent baseflow spring over the last decade due to droughts and increased groundwater pumping. PVS was observed to flow during recent droughts when JWS ceased flowing. Decreasing baseflows in the Blanco River over the past few decades suggest that the PVS is also decreasing over time, and is threatened due to the combined effects of drought and groundwater pumping. Decreasing baseflows will impact the ecology of the Hill Country, flow in the Blanco River, and recharge to the Edwards Aquifer under drought conditions, exacerbating water availability and ecological issues.

Session No. 39

[T29. A Tale of Two Aquifers: Deciphering Characteristics of the Edwards and Trinity Aquifers in Central Texas](#)

Friday, 5 April 2013: 7:00 PM-9:30 PM

Natural Bridge Caverns Underground

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