

Seven hydraulic conductivity values (Shah and Houston, 2007) were compiled for closely adjacent sites in Burleson County from the Texas A&M University Brazos River Hydrologic Field Site (Wroblewski, 1996). Transmissivity values were not computed from these hydraulic conductivity values because saturated thickness at the sites was unknown.

### Hydrogeologic Characterization

#### Altitude of the Top of the Brazos River Alluvium Aquifer

Altitudes of the top of the Brazos River alluvium aquifer (land surface) (fig. 2) range from about 580 feet above NAVD 88 at the northwestern end in Bosque County to about 17 feet above NAVD 88 at the southeastern end in Fort Bend County. The top of the aquifer slopes from northwest to southeast at a fairly consistent rate of about 2.5–3 feet per mile.

#### Altitude of the Base of the Brazos River Alluvium Aquifer

The altitude of the base of the Brazos River alluvium aquifer (fig. 3) ranges from about 480 feet above NAVD 88 at the northwestern end in Bosque County to about 18 feet below NAVD 88 at the southeastern end in Fort Bend County. The altitude of the base is an uneven or undulating surface that, like the altitude of the top, decreases from northwest to southeast but not as consistently as the altitude of the top. There are small areas, for example in Brazos County, where the altitude of the base increases or decreases about 10 feet over short (tens of feet) distances. The largest change in base altitude occurs in Fort Bend County where the altitude decreases about 40 feet. Fort Bend County is an area where the altitude of the base is potentially less reliable than other areas. There, drillers' logs do not always clearly differentiate the sand and gravel of the alluvium aquifer from that of the underlying Gulf Coast aquifer (Chicot, Evangeline, or Jasper aquifer locally, not shown in fig. 1). Because the lithologies of the alluvium aquifer and the Gulf Coast aquifer are so similar, a distinct pick is not easy to make. The control points used in Fort Bend County are those for which base picks could be made with reasonable confidence.

#### Thickness of the Brazos River Alluvium Aquifer

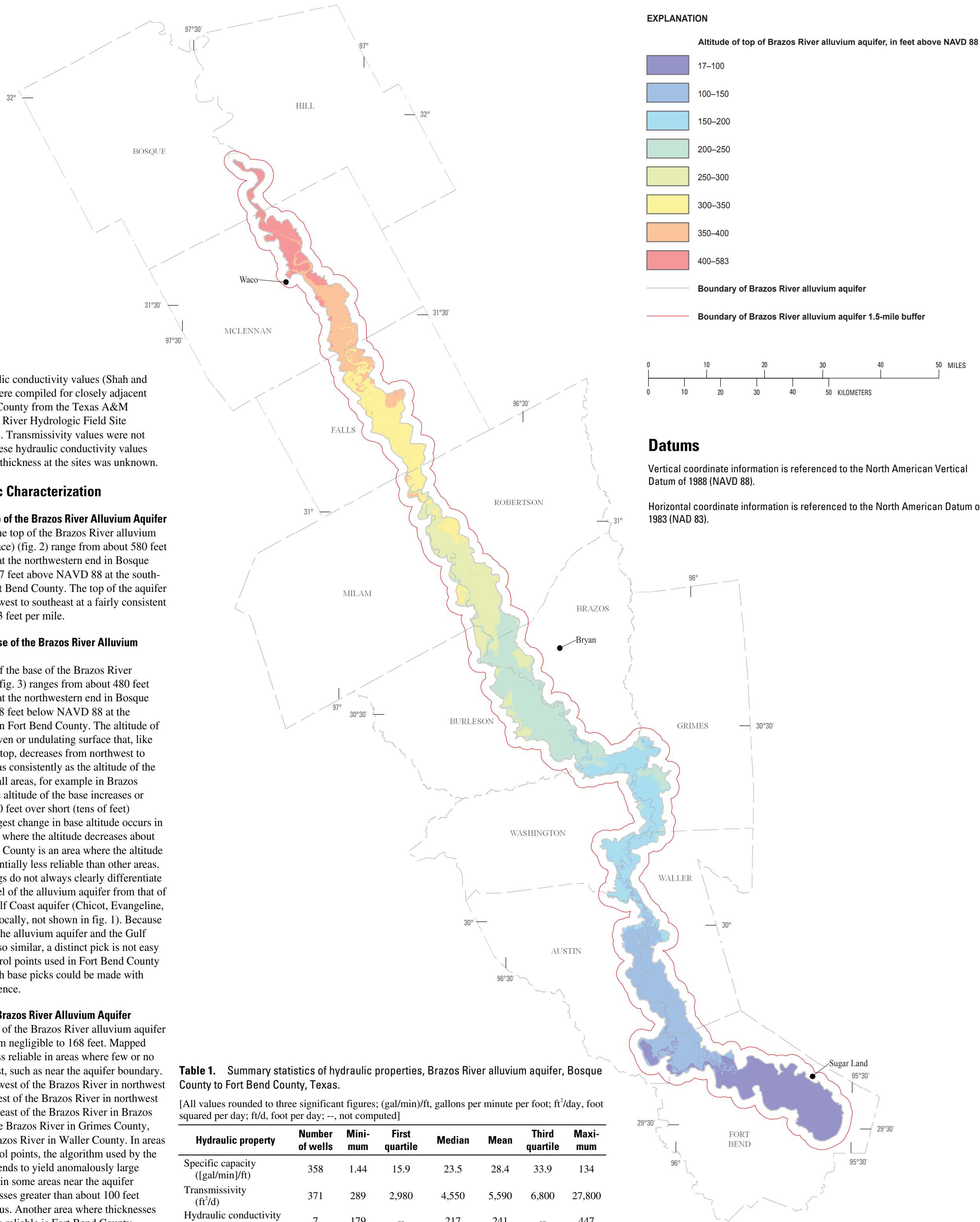
The thickness of the Brazos River alluvium aquifer (fig. 4) ranges from negligible to 168 feet. Mapped thicknesses are less reliable in areas where few or no control points exist, such as near the aquifer boundary. Such areas occur west of the Brazos River in northwest Milam County, west of the Brazos River in northwest Burleson County, east of the Brazos River in Brazos County, east of the Brazos River in Grimes County, and east of the Brazos River in Waller County. In areas of few or no control points, the algorithm used by the GIS interpolator tends to yield anomalously large thicknesses. Thus in some areas near the aquifer boundary, thicknesses greater than about 100 feet might be anomalous. Another area where thicknesses potentially are less reliable is Fort Bend County because of the difficulty in identifying the base of the aquifer from logs as described in the previous section.

**Table 1.** Summary statistics of hydraulic properties, Brazos River alluvium aquifer, Bosque County to Fort Bend County, Texas.

[All values rounded to three significant figures; (gal/min)/ft, gallons per minute per foot; ft<sup>2</sup>/day, foot squared per day; ft/d, foot per day; --, not computed]

Hydraulic property	Number of wells	Minimum	First quartile	Median	Mean	Third quartile	Maximum
Specific capacity (l gal/min)/ft	358	1.44	15.9	23.5	28.4	33.9	134
Transmissivity (ft <sup>2</sup> /d)	371	289	2,980	4,550	5,590	6,800	27,800
Hydraulic conductivity (ft/d)	7	179	--	217	241	--	447

**Figure 2.** Altitude of the top of the Brazos River alluvium aquifer, Bosque County to Fort Bend County, Texas.



## Hydrogeologic Characterization of the Brazos River Alluvium Aquifer, Bosque County to Fort Bend County, Texas

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