Gallery of Geology - High Water on The Rio Puerco

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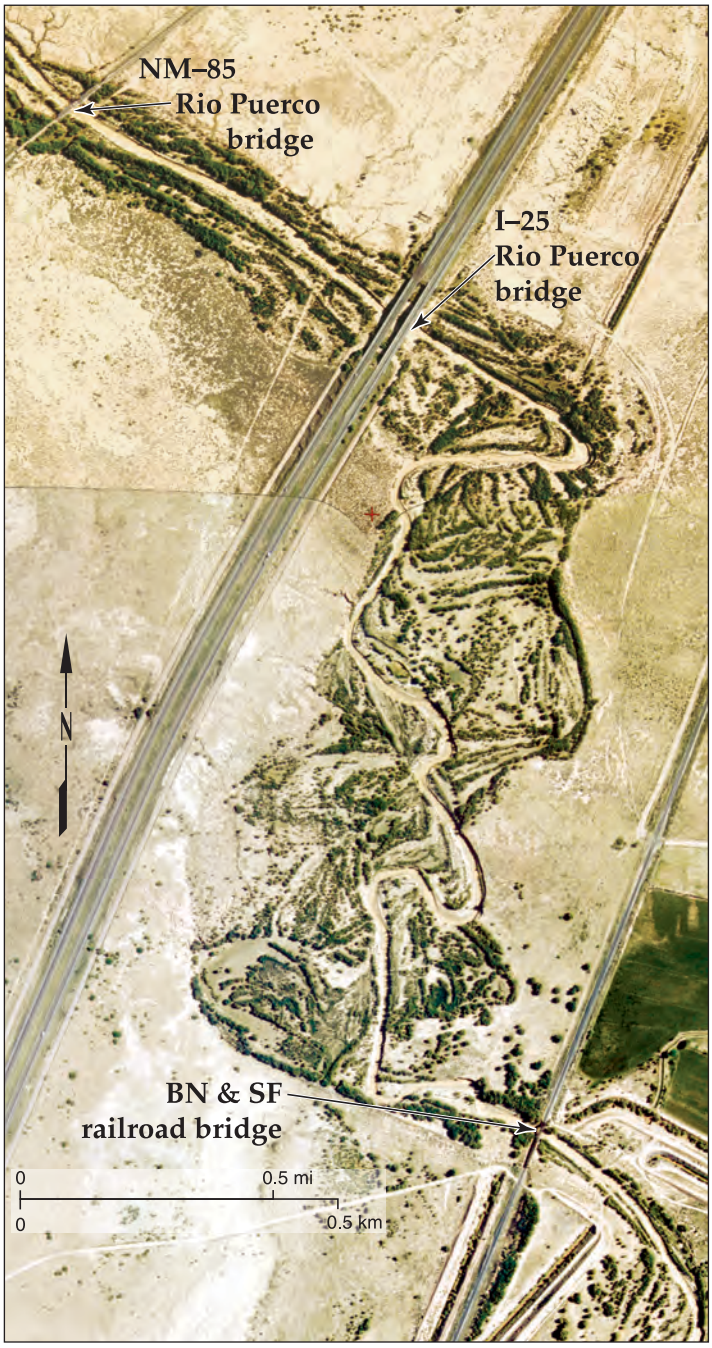
The Rio Puerco is the largest tributary of the Rio Grande in New Mexico north of Elephant Butte Reservoir and drains a watershed area of 7,350 mi^2. From its headwaters in the Nacimiento Mountains the Rio Puerco flows about 170 mi south and joins the Rio Grande just south of the Bernardo exit on I–25. The Rio Puerco is a major contributor of sediment to the Rio Grande, and its name "Puerco" is Spanish for dirty or muddy. Although some maps show the Rio Puerco as a perennial stream, it is actually ephemeral throughout much of its length, flowing in response to spring snowmelt runoff and summer thundershower runoff. In the early 1980s a study (Popp et al. 1983) that included discharge data from U.S. Geological Survey gaging stations supports this conclusion. Discharge data (1951–1980) from near Guadalupe, 5 mi southwest of Cabezon Peak, show that the Rio Puerco flows only 53% of the year. Discharge data (1940–1982) from the gaging station near Bernardo show that near its mouth the Rio Puerco flows an average of 20% of the year. The Rio Puerco is no different from most rivers in the Southwest and is sensitive to short-term changes in seasonal precipitation as well as longer-term climate variation. Discharge averages for the wetter decade of the 1980s must certainly have exceeded averages for the dryer decade of the 1990s.

The Rio Puerco can change quickly from a dry channel to moving impressive amounts of water. In August 2006 New Mexico Tech graduate stu-



New Mexico Tech graduate student Robert Wyckoff walking from Bernardo to the BN & SF railroad bridge 1 mi south in August 2006. The flooded road parallels the railroad grade on the far left side of the photo.

TABLE 1—Maximum discharge at the USGS's Rio Puerco gage near Bernardo from August 3 to August 11, 2006.

Date	Maximum discharge cfs
August 3	759
August 4	2,330
August 5	1,690
August 6	701
August 7	2,310
August 8	2,040
August 9	2,050
August 10	5,410*
August 11	2,860

*Maximum measured discharge at current Bernardo station.

TABLE 2—USGS estimated maximum discharges near Bernardo for historic floods (Heath 1983).

Date	Maximum discharge cfs
August 12, 1929	30,644
September 23, 1929	35,000
September 23, 1941	18,800
September 14, 1972	9,220

August 2006

April 2007

dents Robert Wyckoff and Kinwai Tai took photographs of the Rio Puerco at the Burlington Northern & Santa Fe railroad bridge east of I–25, documenting a pulse of floodwater (in excess of 5,410 cfs) that pushed the Rio Puerco over its banks and onto the deck of the bridge (Table 1). Robert returned to the bridge on April 22, 2007, and photographed a more typical Rio Puerco flow of approximately 1–1.5 cfs. Though impressive, the 2006 flooding of the Rio Puerco is surpassed by several other floods in the 20th century (Table 2).

References

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August 2006

April 2007