



Figure 9. Mean daily flow duration curves based on the period of recorded flows (Calendar Year 1945 through 2013) at the Verde River below Tangle Creek above Horseshoe Reservoir gage (USGS Gage No. 09508500). Also shown is the curve adjusted for the effects of upstream irrigation diversions.

The overall hydrologic regime in the river (i.e., not considering the effects of upstream diversion) during the period of the gage measurements appears to be similar to long-term conditions that existed prior to significant human influences. Estimated annual flow volumes in the river from 1320 through 2005 using tree ring data (Meko and Hirschboeck, 2008) indicate that the mean flow and annual variance during the full period of the estimates are not statistically different from those during the 1945 through 2005 measurement period at the gage (**Figure 10**). The primary human modification to the flows during the measurement period is due to upstream irrigation diversions. Burtell (2014) estimated that these diversions totaled 316 cfs, and 57 percent of the diverted flow was lost to consumptive uses (i.e., about 43 percent returned to the river; thus, should be accounted for in the measured flows). As a result, flows under natural conditions during the irrigation season (typically April 15 through September 15) would have been 180 cfs to 185 cfs larger than the measured flows. A flow-duration curve developed by adjusting the irrigation season flows upward by the larger value of 185 cfs indicates that the discharge in Segments 3 and 4 would have been less than 350 cfs about 50 percent of the time and less than 420 cfs about 75 percent of the time, on an annual basis.