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Sent: Friday, March 22, 2013 9:59 AM
To: Duncan Patten; 'Reinthal, Peter N - (pnr)'
Cc: 'Scott M. Deeny'; 'Craig Sommers'; Davidson Rebecca F
Subject: RE: Aravaipa

Peter and Duncan,

Here are some plots of the estimated flows at the TNC Boundary gaging site (upstream wilderness boundary) and a spreadsheet with the average monthly flows at both the USGS gage and the Boundary site for the period after 1966. (There is a large gap in the USGS data between the early 1940s and mid-60, so I chose not to use the earlier data. Also note that Water Years 2004 and 2005 are missing.) I re-looked at the relationship between the measured flows at the Boundary site and the corresponding mean daily flows, and realized that the relationship we looked at the other day only works for flows up to about 300 cfs. I'm pretty sure we significantly underestimate the Boundary flows if we extrapolate the regression equation beyond about 300 cfs. To get around that issue, I used the regional regression equations for ungaged watershed in Southern Arizona from the USGS National Stream System database to estimate the relationship between the expected flows at Boundary Creek and the USGS gage for the 2-through 100-year events (2,400 cfs to ~22,000 cfs). These equations indicate that, for flows in this range, the Boundary Creek peak discharges would be in the range of 85% to 90% of the peak discharge at the USGS gage. I can explain the process in more detail next time we talk, if necessary.

Hopefully, this will giving you all something to work with. Please give me a call if you have question or feel anything is amiss with this preliminary analysis. Thanks.

Bob

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