

Responses to Questions from the BRAZOS BBASC to the Brazos BBEST

Set Two, Received April 17, 2012

1. Question: *Does designation of low biotic integrity indicate an unsound environment?*

Answer: The BBEST is working to develop a consensus response to this question.

2. Question: *How does the use of regulated flows to develop flow recommendations conform to the assumptions of the natural flow paradigm?*

Answer: We assumed the regulated flows are maintaining the species that are present in the reach right now. We used the total period of record (which included pre-development conditions, if available) for our work, and we did this assuming that for degraded reaches, the full period of record may improve conditions for populations of native species that have undergone decline.

3. Question: *Are there flow recommendations that BBEST can easily provide that do assure a higher level of ecological conditions, specifically for segments that have been altered from their natural flow regime and which are currently judged to have low biotic integrity ?*

Answer: Not easily. The flow regimes that we recommended were our best estimates. We would add that alterations from natural flow regime are not the only potential causes of low biotic integrity.

4. Question: *How often do these flow recommendations need to occur to maintain a sound environment? Would the natural frequencies be assumed to be a baseline target for attainment?*

Answer: The Environmental Flow Regime Recommendations in the report set aside flows to be protected if they occur. The recommendations do not assure any given frequency. The only way to determine what frequencies would actually be realized under the e-flow regime and a set of implementation guidelines is to model those dynamics -- which we did for only two reaches (Seymour, Richmond). We didn't have time to model other scenarios. We believe that the recommendations and the suggested implementation approach will provide sufficient flows to maintain a sound ecological environment.

5. Question: *Can you provide some further rationale on the gage selection criteria? How important is it that all of these be included?*

Answer: The gage selection criteria are covered in Sections 3.3 and 3.4 of the report. The key criteria are geographic coverage of the focal reaches listed in Section 3.2.1, length of the available gage record (the longer the better), gage still in operation so it can be used in new water right permits, significant drainage area (500 square miles or more), preference

where possible for gages with flows that are not significantly disturbed by human activities (reservoir construction, diversions, or wastewater discharges), and preference, where possible, for gages with water quality data and/or biological data in the vicinity. We tried to select gages that cover the entire basin, and we believe that the selected gages accomplish that purpose.

6. *Question: Can you provide an opinion as to the importance of all of the pulse levels that are recommended?*

Answer: We attempted to select pulse levels that appear to have a true ecological function. We attempted to select pulse levels that appear to have a true ecological function. Where there was doubt, we took a conservative approach and included the pulse rather than exclude it, since our assignment was to focus on the needs of the environment. It is hoped by the members of the BBEST that scientific data will become available over the next 10 years that will allow us to refine the recommendations during the adaptive management review process (i.e. being able to answer if a pulse for which we do not currently have definitive information on its value to the environment is: absolutely needed, not needed, or its level needs to be adjusted to attain maximum environmental benefit).

7. *Question: One of the questions discussed at the Board [stakeholder] meeting was for a comparison of how the BBEST recommendations correspond to the numbers currently used for the permitting process. Could the BBEST not give just the Lyons numbers, but an actual breakdown of how the current rules mesh with what the BBEST is recommending?*

Answer: See the response to Question Number 3 in the first set of questions from the BBASC. In general, we expect that Lyons method flows would be higher than the base flows in the Environmental Flow Regime Recommendations and lower than the pulse flows in the Environmental Flow Regime Recommendations in most cases.