

May 1, 2012

Dear Chairman Spurgin,

Thank you for the opportunity to provide written comments to the Brazos Basin and Bay Stakeholder Committee (BBASC). These comments are a restatement of comments that I made publically at the BBASC meeting on April 24, 2012. The comments in yellow are citations that support my contention that “Biotic integrity” and “Sound Ecological Environment” are synonymous terms though I did not cite these definitions during my public comments.

My name is Joe Trungale. I am a surface water hydrologist and currently serve on two other BBEST committees, the Trinity and San Jacinto Basins and Galveston Bay BBEST and the Colorado and Lavaca Basin and Matagorda Bay BBEST. As such I understand the level of effort that the Brazos BBEST put into their report and commend them for their hard work. Since about 2005, I have also worked with the group the Friends of the Brazos River (FBR) to address the question of how to maintain flows to provide for a sound environment. FBR has also closely monitored and participated in the process related to the Brazos River Authorities Systems Operations Permit.

I believe that the Brazos BBEST report provides good descriptions of flow regimes that are protective of a sound environment. Consistent with other BBESTs, the Brazos BBEST relied on an application of the natural flow paradigm as the primary basis of their recommendations and given the time and resource constraints imposed on this process, I believe that this was an appropriate approach. However I would like to draw your attention to number of issues that cause me concern.

First, based on my reading of the report, I think it is clear that the Brazos BBEST found that some of the sub-basins in the Brazos are currently unsound environments. The report addressed the issue of sound ecological environment in a few pages in section 1.3. In that section the BBEST defines sound ecological environment and characterizes the biotic integrity of each sub-basin. The BBEST characterized three sub-basins as sound (high integrity means sound environment) and two as unsound (low integrity means unsound environment) and the remaining seven as somewhere along the biological condition gradient between sound and unsound. While the BBEST report notes that stream fragmentation, caused by dams, is partly responsible for the unsound conditions, the descriptions for both of the sub-basin designated as low integrity, or unsound, (Middle Brazos and Clear Fork) suggest that part of the problem has to do with habitat alterations resulting from changes in flow.

“Biotic integrity” and “Sound Ecological Environment” are synonymous terms.

EPA’s web site on the Clean Water Act<sup>1</sup> describes biotic integrity as

“the ability to support and maintain a balanced, integrated, and adaptive community of organisms having a species composition, diversity and functional organization comparable to those of natural habitats within a region” (Karr, J. R. and D. R. Dudley. 1981)

Sound Ecological Environment is described in the Texas Instream Flow Program’s Technical Overview Document<sup>2</sup> as

“A resilient, functioning ecosystem characterized by intact, natural processes and a balanced, integrated, and adaptive community of organisms comparable to that of the natural habitat of a region.”

Second, a sound ecological environment will not be maintained by continuing to provide the flows that produced the unsound conditions that currently exist in the basin today. This leads to the second area where this BBEST report differs from some of the previous BBEST reports; namely in providing an incomplete discussion of attainment targets. The natural flow paradigm, upon which the BBEST recommendations rests heavily, recommends mimicking critical components of the natural flow regime. While the BBEST report provides a description of the full flow regime, it does not provide information on attainment targets that would allow for an evaluation of whether or not these flows will occur at sufficient frequencies to meet the goal of maintaining a sound ecological

<sup>1</sup> <http://www.epa.gov/bioiweb1/html/about.html>

<sup>2</sup> [http://www.twdb.state.tx.us/publications/reports/numbered\\_reports/doc/R369\\_InstreamFlows.pdf](http://www.twdb.state.tx.us/publications/reports/numbered_reports/doc/R369_InstreamFlows.pdf)

environment. Some of the information that could be used to address the attainment frequency issue, specifically the historical attainment frequencies for base and subsistence flows, is produced automatically by the HEFR software program. Appendix G of the BBEST report includes the HEFR output tables that include the historical frequency information; however these values were removed from the tables provided in the main body of the report. These historical frequencies indicate that, at least for the middle Brazos, flows have been below subsistence levels very infrequently, 5 to 10 % of the time, and even the high base flows were violated less than half of the time. As we look to the future, if models suggest large deviations from these frequencies, then we can expect further degradation of these already unsound systems.

Third, and finally, I support the BBEST modeling efforts to simulate potential water development scenarios but recommend that the BBASC carefully consider their goals for balancing both water supply and environmental protection. A model which indicates some change in potential yield of a project would be more useful if that yield is put into the context of how much supply is needed and when. If environmental flows reduce the yield of the project by 25% but the revised yield still meets the water supply needs for the next 50 years, this impact is less significant than an alternative which results in reduction of 10% but which results in a yield which does not meet the water supply needs. On the environmental flow side of the scale, we suggest that the BBASC confer with the BBEST to determine how much reduction in attainment of the various targets is acceptable to still maintain the goal of meeting a sound environment.

In conclusion, I would like to reiterate that some areas of the Brazos basin are currently unsound ecologically. Maintaining a sound ecological environment into the future will not be achieved by continuing to do the things which caused these problems in the first place. In addition to recommending protective standards, the BBASC should begin to consider reasonable strategies aimed at restoring soundness to these areas.