

**Brazos River and Associated Bay and Estuary System
Basin and Bay Expert Science Team (BBEST) Meeting
Tuesday, July 19, 2011 at 10:00 a.m.
Brazos River Authority, Waco, TX**

Meeting Minutes

[All BBEST members were in attendance.]

1) Public Input

None.

2) Approval of Minutes

Chairman Tom Gooch requested that the minutes reflect member attendance. The BBEST approved the June 13, 2011 draft meeting minutes as amended.

3) Budget Update

Tom told the group that most of the budgeted funds are expected to be spent. Mark Wentzel (TWDB) said that the BBEST budget was sent to the Environmental Flows Advisory Group (EFAG) and that no comments have been received. The group discussed ideas for spending funds allocated to contracts. The BBEST decided to have Vice-Chair Kirk Winemiller pursue a contract of up to \$25,000 with Texas Water Resources Institute (TWRI) to write the final recommendations report. Mark said to get a scope of work to TWDB within two weeks. Mark also mentioned that the EFAG requested that TWDB find funds within their agency budget to help support the work of the four SB 3 groups (Brazos, Nueces, Rio Grande, SAC) that would be active after August. He said that approximately ~\$268,000 was identified for that purpose. TWDB will keep the BBEST informed as to how much money they will be given for the next fiscal year.

4) Discussion of Timeline

An updated timeline was handed out and discussed by Kirk (*revised timeline posted to TCEQ website*), saying that the group's work was on track. Dan Opdyke (TPWD) mentioned that some BBESTs have spent considerable time looking at implementation examples in order to assist the BBASCs with their balancing work. The group discussed the merits of evaluating hypothetical vs. actual water supply projects. David Dunn talked about possible projects in the Brazos basin. Tom said that he would solicit input from the BBASC regarding projects to evaluate. Dan mentioned that he or Kirk Kennedy would be speaking about the project evaluation tool, Flow Regime Application Tool (FRAT), at the October meeting of the BBASC. Dan described what FRAT does and listed the things needed to begin using it (flow matrix, hydrologic conditions, pulse tiers, implementation rules, project for analysis, and grain size analysis and cross sections for the sediment model) and answered questions from the BBEST. David agreed to put together a list of potential major projects for the basin that Region G has evaluated with comments on their sensitivities. If a contract for these analyses is needed, it could be pursued with next fiscal year's funds. Dan mentioned that he could potentially do the work. This topic will be revisited in coming months as more of the BBEST's work gets done.

5) Review of Preliminary Results – Dan Opdyke

Dan presented the results of his hydrographic separation analyses at two gage sites. The BBEST first looked at IHA flow separation results in several years of the period of record for the Clear Fork Brazos River near Nugent. The base flow-pulse flow separations appeared reasonable in most cases. Kirk said that he looked at the preliminary HEFR results of the lower Brazos River gages and compared them to the oxbow connectivity data from TWDB. The first tier pulse flows would connect oxbows in some places (e.g., Hempstead gage). In response to a question about subsistence flows, Dan explained that HEFR default for subsistence flow calculation is the median of the bottom 10% of seasonal base flows. Tom agreed with practice of some of the previous BBESTs that subsistence flows shouldn't be less than 1 cfs. The group discussed Tiffany Morgan's comparison of potential subsistence flow calculation approaches and ways they might be implemented. Discussion shifted to how pulse flows are characterized, and Dan explained how that works in HEFR. Determination of what pulses are overbank comes after the fact. The group next looked at flow separation results for the Brazos River at Richmond data. Again, the group felt that the separations looked reasonable. Tiffany said that she send out a table to everyone comparing several different subsistence flow calculations (HEFR default, Q90, Q95, and 7Q2) on a seasonal basis.

Dan pulled up preliminary HEFR output for the same two gages. He showed results from the Nugent gage with two different seasonal breakdowns. Kirk and Tim Bonner discussed the biological implications of getting pulses in winter versus not as many in summer. They said it may not matter as much for the Nugent gage since fish species there are not as flow dependent. Dan showed the frequency options for pulse flow tiers. The group next discussed overbank flows. Kirk mentioned what was done in determining overbank flows in the Sabine-Neches BBEST, which was based on evaluating inundation periods from aerial imagery, and that the BBEST recognized their importance, but did not recommend them. Kirk said that since sediment transport would be more important in the Brazos, especially in the lower basin, the BBEST may not need to make overbank recommendations. The group then looked at HEFR output at the Richmond gage. For subsistence, the group might want to go with annual Q95s rather than seasonal.

6) Ecology Subcommittee Discussions

The group looked over the summary of the July 1st ecology subcommittee meeting provided by Kirk (*meeting summary posted to TCEQ website*). Discussion centered on whether a habitat availability/suitability study, to potentially inform instream flow recommendations, should be done at the two middle Brazos River sites (Palo Pinto and Glen Rose) where flows have been altered due to upstream reservoirs. Tim Bonner noted that the Guadalupe-San Antonio BBEST was criticized that biology didn't seem to play a big role in their recommendations. He said that biology is playing and will play a factor in the Brazos BBEST work through the ecological benefits of multiple tiers of flows that the group will recommend, in the biology-based determinations of ecological soundness (though some alterations not flow-related), and in the evaluation of high flow pulse values to ensure oxbow connectivity in the lower river (e.g. Hempstead gage). Tim said that habitat modeling could be used at the middle Brazos sites to

see what habitat is available in the post-impact condition and make adjustments as necessary. Kirk wondered if there would be sufficient time for the study to gather enough information for it to be worthwhile. It could show that there's plenty of habitat and that something else is influencing the shift in the fish fauna. Tim reminded the group that the major change in the fish community in the middle reaches of the river is the loss of many of the fluvial specialist species (sharpnose shiner, smalleye shiner, plains minnow, silverband shiner). He summarized that a habitat study would be risky (i.e., might not show habitat limitations or result in any changes to HEFR), but at the least it would demonstrate an attempt to apply biology to an altered reach of the river. Dan Opdyke gave an overview of what some of the other BBESTs have done or are doing with this type of study. The group discussed what would be involved in a potential habitat availability study and who might be able to do it. Tim asked what the next step would be if no study were done. Kirk replied that they could go with the HEFR numbers based on an agreed-upon period of record, a narrative that recognizes changes in the fish fauna, and a list of possible reasons for the changes.

Tim next said that at sites that were deemed sound, or at sites where changes were not flow-related, the subcommittee agreed to go with the HEFR numbers. Kirk reiterated that the subcommittee recommends all components of the flow matrix. A description of the ecological function of each component, tailored to the specific species of the Brazos basin and incorporating known studies where available, will be written up. Emphasis will be placed on areas where actual data backs up HEFR numbers, such as oxbow connection levels from a TWDB study on the lower Brazos River that verify high flow pulse numbers. The group discussed other aspects of high flow pulses besides magnitude, such as duration and volume. Dan Opdyke explained how those statistics are calculated in HEFR. The importance of how pulse flows are implemented was also discussed. Dan gave an overview of how other BBESTs dealt with this issue. Tom offered to look at the implementation rules in the Guadalupe-San Antonio BBEST report, as well as what was in the new TCEQ rules, and draft up potential implementation rules for the group to review.

Tiffany presented the differences in Q95 subsistence flows when calculated from seasonal vs. full-record flows. There was discussion of TPWD comments on the Guadalupe-San Antonio BBEST subsistence flows (HEFR defaults) that the values were too low. The group also talked about rules for rounding flow values. David Dunn offered to look at the rounding rules used by the Colorado-Lavaca and Guadalupe-San Antonio BBESTs and come back to the next meeting with a rounding proposal for group discussion. The BBEST agreed to use the year-round flows for calculating Q95 for subsistence flows, and that the minimum value would be 1 cfs.

Tiffany next displayed some land cover maps produced via GIS showing riparian vegetation composition that could be used for riparian characterization and potential assessment. Kirk didn't think a formal riparian flow needs assessment was needed since there essentially aren't any strictly flow-sensitive riparian species in the basin. The group agreed to have Tiffany produce land cover maps, out to one-half mile on either side of the mainstem and one-quarter mile on either side of the smaller tributaries, on major stretches of the water course near the recommended gages.

George Guillen reiterated that there's not much of an estuary associated with the Brazos River, but that there is a growing delta. The main data at present are the TWDB inflow estimates. George said that he would put together a narrative describing the system and what information we currently have. He will first send his draft narrative to the ecology subcommittee for comments, then the full BBEST. Tiffany offered to write up a narrative about the riparian characterization/assessment and the subsistence flow approach, describing the thought processes involved. Other BBEST members agreed to draft narratives on high flow pulses (Kirk), base flows (Tim), and overbank flows (Dan Gise). Jack Davis will summarize what's available as far as non-fish biota such as mussels. Historical overviews will be done on freshwater fishes (Tim), estuarine fishes (George), benthic macroinvertebrates (Jack), and riparian vegetation (Tiffany). Assignments don't have to be done by the next meeting. Tim proposed that the group use the Guadalupe-San Antonio BBEST report as an organizational model.

7) Hydrology Committee Discussions

Tom recapped what the group has discussed on the topic of seasonality. The group looked at temperature and flow data to help determine the best option. The BBEST agreed to go with a three season breakdown of Nov-Feb, Mar-Jun, and Jul-Oct.

Regarding period of record, the group agreed to use the full period of record except at the Palo Pinto and Glen Rose gages, where the post-reservoir record would be used. Tom will review the flow separation parameters of all the gages and will send comments to Dan Opdyke. Other members are welcome to comment as well. Tom may assign some section write-up tasks to the hydrology subcommittee after he looks over the Guadalupe-San Antonio BBEST report outline.

8) Other Business

The next meeting is scheduled for August 16th at 10 am at the Austin office of Freese Nichols. Dan Opdyke mentioned that he would not be at that meeting, but he will send a revised set of HEFR matrices to the group once he completes them.