

**Nueces River and Corpus Christi and Baffin Bays  
Basin and Bay Expert Science Team (BBEST)**

Monday, August 15, 2011 at 9:00 a.m.

San Antonio River Authority, 100 East Guenther St., San Antonio, Texas, 78204

**MINUTES**

**Members Present:** Sam Vaughn, Chair; Rocky Freund, Vice Chair; Tom Arsuffi; Dave Buzan; Ben Hodges; David Hoehinghaus (via teleconference); Ryan Smith; Lonnie Stewart; Greg Stunz; and Jace Tunnell

**1) Call to Order, Introductions, and Public Comment**

BBEST chairman Sam Vaughn called the meeting to order. There was no public comment at this time.

**3) Science Advisory Committee (SAC) Report (Montagna)**

SAC liaison Dr. Paul Montagna provided an update on the SAC activities. SAC members are presently preparing for the September 8, 2011 EFAG meeting at which the EFAG will consider the work plans for the Sabine/Neches, and Trinity/San Jacinto River Basins. The Sabine BBASC revised their work plan in response to SAC comments and the revised plan is a good model for future work plans. The SAC is also preparing an addendum to the overlay guidance document on geomorphology and looking at the concept of market approaches to support environmental flow. He noted that Texas does not have a water market and the water trust that is in place is not utilized. He anticipates that the SAC will prepare a guidance document on the market approach sometime in the future.

**4) Basin and Bay Area Stakeholders Committee (BBASC) Report (Mims)**

BBASC Chair Con Mims presented an update on the activities of the BBASC. The next meeting of the BBASC is scheduled for Wednesday, October 19, 2011 in Uvalde. Members are awaiting the BBEST report and hope to have their recommendations completed by the end of September 2012.

**5) BBEST Budget Status (TWDB, Vaughn)**

Chairman Vaughn presented an overview of expenditures and remaining funds. He said 2011 funding was adequate to cover expenditures for this meeting as well as charges for upcoming subcommittee meetings. He reminded members that funding runs out on August 31, 2011. He added that TWDB reevaluated their own budget and found the additional monies requested (\$22,000) to allow the BBEST to support the BBASC during their review. Chair Vaughn is presently working with SAC Chair Huston and the TWDB to find additional funding to cover the expenses (not time) necessary for members to attend the two BBEST meetings scheduled in fiscal year 2012. He reminded members to submit outstanding requests for reimbursements.

## **2) Approval of June 24, 2011 Meeting Minutes**

The minutes for the June 24, 2011 meeting were reviewed and revised. The minutes as amended for the June 24, 2011 meeting were approved by consensus.

## **6) Recommendations Report & Schedule (Vaugh)**

Chairman Vaugh discussed the recommendation report and schedule outline including assigned hours and scheduled meeting dates. He reiterated that a draft document should be complete prior to September 23<sup>rd</sup>, since key decisions will be made at the September 23, 2011 meeting. Members should be prepared to sign off on the document at the October 7, 2011 meeting. The final report will be delivered to the stakeholders during their October 19, 2011 meeting.

## **7) Estuary Work Elements and Issues (Stunz)**

Member Dr. Greg Stunz gave an overview of the recent activity of the estuary subcommittee. He stated that the subcommittee is about 90% done with the analyses and will begin to draft the narrative shortly. He presented an outline showing what was discussed last time including changes based on those discussions as well as the new work completed. He talked about the impact of Lake Corpus Christi and Choke Canyon Reservoir on the inflow to the Nueces delta and estuary. Dr. Jim Tolan discussed the harvest of oysters, trends of oyster catches and how commercial harvesting of oysters was banned in the Nueces Bay in 1991. At that time, the bay became a nursery ground for oysters and sampling ceased. They discussed the impacts of substrate deficiencies and high salinity (due in part to reservoir construction) in limiting oyster re-colonization as reflected in measured density and how the results could be related to the way the data was collected.

Dr. Stunz talked about the hydrology and the salinity of the bay both historically and today. He noted the points where TWDB applied TxBLEND and the how the results are a good estimate compared to the actual data. He further noted an apparent convergence at about 20 ppt as a target salinity for the base freshwater inflow recommendation considering benthic infauna, fish, and oysters. Members raised concern with considering a single salinity value at a single location. Members agreed to further evaluate both Salt 01 and Salt 03 data as they relate to freshwater inflow and indicator species.

Dr. Stunz reported that although nutrient data is abundant, it does not provide a lot of information. Inflows are is still necessary to maintain proper nutrient balance and the subcommittee determined a necessary flow of 10 cfs.

Dr. Montagna talked about adding a discussion of the Allison Diversion Project and the water pumped back to the marsh and river under section 5.2 of the report. The freshwater rich in nitrogen is good for the marsh and not the river.

Dr. Stunz discussed the recommendations of the estuary subcommittee which have not yet been determined. The subcommittee will meet soon to decide whether to have a single recommendation or multiple site specific recommendations to address bay vs. delta/biological indicators. Chair Vaughn encouraged the subcommittee to have a single chart if possible.

### **8) Instream Work Elements and Issues (Smith, Buzan)**

Member Ryan Smith reviewed the percent of available habitat for chosen focal species using full, late and early periods of record. Mr. Smith discussed the potential solutions as identified by the instream flow subcommittee for various sites reviewed.

Mr. Smith noted that the results from the Nueces Three Rivers site were very different from the other sites in that the curves reflected much smaller habitats. Members noted that Three Rivers is a highly modified system and the question is whether to compare a recent channel with recent hydrology. Chair Vaughn noted that there doesn't appear to be a need to be consistent between the Nueces at Three Rivers and the Nueces at Laguna, but there is a need to be consistent between the Frio River at Concan and the Nueces River at Laguna.

Members decided to review previous runs as a sensitivity analysis to see if tweaking the parameters affects the interpretation of the data. Mr. Smith performed a similar review at the Nueces at Laguna site and found the base flows are quite similar. However, the pulse flows are quite different. Chair Vaughn cautioned exploring previous analyses due to the time constraints of the BBEST. However, it could be recommended as a future study if members consider it warranted.

From the data presented, members questioned why the recommendation will not be based on the late period of record since the data shows more quality habitat available at all three sites during the late period of record. Members discussed that the goal of the BBEST is not necessarily to maximize habitat for all species, but to maintain a sound environment.

Mr. Smith asked the group for guidance as to any particular focus for the future work such as:

- Spring numbers necessary for the flow sensitive species (average/high base)
- Minimal habitat during stress periods (dry base/subsistence)

Members discussed whether to identify species which are more flow sensitive to direct the focus on certain parts of the matrix. Members talked about tentative recommendations for which a work plan can be prepared.

For the Frio at Concan and Nueces at Laguna, considering headwater streams with gages that will be representative of perennial streams above the larger lakes in the basin, members chose between the base flow plus 10% or low pulse type numbers for maximum habitat measures. Members discussed the possible options and requested additional time series information for Laguna. Members **AGREED** to use 200% of the highest base flow number in the full period to define the range to find the maximum weighted usable area for Concan and Laguna.

Members **AGREED** to allow transferability to other gages with regards to choice of period of record or choice of parameterization of HEFR.

Members **AGREED** to include the three latest matrices presented in their final report. Mr. Smith **agreed** to run the analysis for a subgroup of species without habitat quality applied at Three Rivers. Members **AGREED** to modify the color ranges for the final matrices to green (75% - 100%), blue (50% - 74%), pink (25% - 49%), and white (0% - 24%).

Member Dave Buzan presented the results of the Instream Flow Subcommittee's discussion on flow regimes for intermittent streams and the subcommittee's. He reviewed the decision to assign a minimum value of 1 cfs for all flow values less than 1 cfs and the results of the HEFR runs where Dr. Dan Opdyke, TPWD, was requested to calculate the following:

- 2 per year pulse with lower bound, upper bound and central tendency on volume and duration
- 1 per season pulse and if available, a 2 per season pulse

#### Nueces River at Laguna

Mr. Buzan presented the results from the new HEFR runs for the Nueces River gages. He talked about the August 9, 2011 HEFR output which showed the one per year, two per year and seasonal pulses (when available, three per season and four per season) including the infrequent large pulses. He noted that it did not show the one per two year or one per five year pulse that are still part of the flow regime.

He presented the results for the full period of record and a drier period of record (from pre-1969) which showed lower pulse volumes and magnitudes. The changes in the recommendations are as follows:

Nueces River at Laguna: addition of intermediate 2 per year pulse

West Nueces at Brackettville: addition of intermediate 2 per year pulse  
Nueces at Uvalde: addition of intermediate 2 per year pulse  
Nueces at Cotulla: addition of intermediate 2 per year pulse, three per winter season 1 cfs pulses, and three per spring seasonal pulses

Mr. Buzan asked members to decide on these additions. He said this would apply to intermittent streams only.

Nueces at Tilden: addition of intermediate 2 per year pulse, 3 per season pulses, and 4 per season pulses

Leona Springs: no pulses

Frio River at Concan: Frio considered perennial

Dry Frio River at Reagan: Dry Frio considered perennial

Frio at Derby: intermittent with addition of intermediate 2 per year pulse, 3 per winter season pulse ( not recommended) and 4 per spring season pulse

Frio at Tilden: intermittent with addition of intermediate 2 per year pulse, 3 per season pulses, and 4 per season pulses

Sabinal River at Sabinal: perennial

Sabinal River below Edwards outcrop: addition of intermediate 2 per year pulse

Seco Creek at Utopia: addition of intermediate 2 per year pulse, 3 per season pulses, and 4 per spring season pulse

Hondo Creek at Tarpley: intermittent, addition of intermediate 2 per year pulse, 3 per season pulses, and 4 per spring season pulse

San Miguel Creek: intermittent, addition of intermediate 2 per year pulse, 3 per season pulses, and 4 per season pulses

Atascosa River at Whitsett: perennial

San Fernando Creek: addition of intermediate 2 per year pulse, 3 per season pulses, and 4 per season pulses

Members opined that the benefit of a pulse should not be judged by its magnitude but by the ecological benefit of the pulse to the overall system.

Mr. Buzan presented a slideshow on the duration and volume of pulse flows and how he identified the pulses from the hydrograph. He noted the relationship between pulse volume and peak flow and noted that the relationship is not as definitive during wet year conditions. He showed how the HEFR bounds would be applied.

Chair Vaughn discussed the Flow Regime Application Tool (FRAT) and how it provides long term flow frequency curves, the percentage of time a flow is equal or exceeded, and the minimum flow protected by the recommendation. Using a large reservoir project and a run of the river project, he showed how the tool is applied to obtain modified streamflows so that support of a sound ecological environment can be assessed.

Mr. Buzan asked members to consider the recommendation of the instream flow subcommittee for pulse flows: one per five years, one per two year, one per year, two per year pulses, and any seasonal pulses that were available below one per season where the additional seasonal pulses are considered for intermittent streams only. Members discussed the importance of the additional pulses because they are not a source of bank flow and only are capable of keeping the stream wet. However, these smaller pulse flows do provide an ecological function.

Chair Vaughn proposed evaluating two sites by comparing two flow regimes using all applicable tools, overlays, etc. He suggested using Nueces River at Cotulla and Laguna example projects to consider flows resulting from alternative flow regime recommendations with and without 3/season and 4/season pulses and with and without upper bounds on pulse volumes (vs. central tendency values). Members discussed the hydrologic conditions to apply in the comparison and agreed to use an antecedent 12-month moving average such that dry, average, and wet conditions occur 25, 50, and 25 percent of the time, respectively. Members AGREED on the parameters chosen for the test.

#### **10) Future Meetings**

The next BBEST meeting will be held on Friday, September 23, 2011 at HDR in Austin. The following meetings will be held on Friday, October 7, 2011 at TPWD in Austin.

#### **11) Public Comment and Adjourn**

BBASC Chairman Mims emphasized that all BBEST recommendations need to be supported with science.