

## Sabine-Neches BBASC Member Comments

Topic	Statement
Consider BBEST Recommendations in Conjunction with Other Factors	General observation - When the environmental flows are put in place it seems that permitting a future reservoir on the main stem of a river will be made more difficult due to the dam potentially having to pass the high flow pulses downstream. It appears that an easier design would be to build a smaller off channel (or small tributary) reservoir with a pump station in the river which would scalp water from the river.
Consider BBEST Recommendations in Conjunction with Other Factors	I recommend that Freese and Nichols perform HEFR analyses (since they ran the original analyses) for all future reservoirs in the Sabine and Neches basins that are in the 50 year planning horizon for the regions C, D and I water plans. I believe that Fastrill and Columbia are the only reservoirs that fit that criteria. Will the proposed environmental flows affect the firm yield from the proposed reservoirs?
Consider BBEST Recommendations in Conjunction with Other Factors	I recommend that the Regions C, D and I planning groups review the 2010 Initially Prepared Plans for the supply and demand in the Sabine and Neches basins. I do not believe that the environmental flows would affect the firm yield of existing projects (assuming that they are junior in priority) - unless the recommended environmental flows would be unattainable without additional releases from existing projects.
Consider BBEST Recommendations in Conjunction with Other Factors	I assume that many of the existing water supply reservoirs in the Sabine and Neches basins have a required minimum release flow. Are these releases adequate to cover the base and or subsistence flows at the selected gauges as proposed by the Sabine Neches BBEST? Would the high pulse flows be covered by the releases? Do we need to perform additional HEFR runs to know?
Consider BBEST Recommendations in Conjunction with Other Factors	How would the BBEST recommended environmental flows affect existing run of the river water rights? Do we need to perform additional HEFR runs to know?
SB3 BBASC Definition and Charge	I recommend that the Environmental Flows Advisory group be copied on our meeting information prior to our group finalizing our recommendations. In my opinion it would be very beneficial if Chairman Ritter could attend one of our meetings prior to our final vote. My main desire to keep in communication with the EF AG group is to insure that our group is acting in accordance with what the legislature envisioned. It would also be beneficial to have discussions with the Trinity / San Jacinto stakeholders prior to finalizing our report to the legislature in order that our reports are consistent.
SB3 BBASC Definition and Charge	The bill, SB3, was a bad bill & underfunded by the Legislature for the charge it intended. Non-state employees expenses were not allowed, yet the influence of state agencies had a large impact on the results with the full weight of that influence allowed as well as well-funded environmental groups.
Critique of BBEST Recommendations and Analysis	Objectives only address the lower basins & adequate studies were not made per the upper Sabine where water flows are limited.
Critique of BBEST Recommendations and Analysis	The northern areas needs were not addressed much less their ecosystems. Northern areas potential development conditions & needs were not studied nor their future stress on the system was not addressed. Testing points in the northern basin were limited if not omitted.
Work Plan	To develop an independent work plan incorporating the report will need more detail from the committee without additional discussion from the TPWD, other agencies, & environmental groups who do not agree with the bottom line anyway.
Critique of BBEST Recommendations and Analysis	On p.9 the goal of the SN BBEST is to maintain a sound ecological environment which is defined on that same page as retaining "key features of the natural flow regime". The Report goes on to include overbank flows as a component of the in stream flow regime. However, the Report, on pp. 19-20, goes on to say that overbanks flows cannot be recommended and "should remain within the domain of nature". Since the environmental flow process is intended to provide guidelines for the management of riverine flow, it would seem that the domain of nature is not a part of the process. The Report correctly discusses the value of overbank flows, which are within the "domain of Nature", but then excludes them from the presumed managed flow regime because of liability for property damage and the loss of human life. No evidence or even data is offered to justify the exclusion. The contradiction must be addressed.
Critique of BBEST Recommendations and Analysis	Recommendation 6 on p. 15-16 seems to be arbitrary and not based on science. The discussion states that some BBEST members supported the use of the 5th percentile as the subsistence flow criterion. The report also notes "widespread support within the environmental flows arena" and that "recent studies and reviews have concluded that the 5th percentile marks a significant point below which already stressful conditions in the river change rapidly". Nevertheless, BBEST goes back to the lower HEFR subsistence value pending further study. Why not use the 5th percentile until more conclusive data is acquired? Whatever the case, the decision would be based as much on politics and economics as on science.
Critique of BBEST Recommendations and Analysis	The intent of SB3 was to ensure a healthy environment in the estuaries, but the BBEST Report generally neglects the estuaries and concentrates on flows hundreds of miles upriver. Related to this, the gauge data seems to be adjusted for water usage (actual, permitted, or merely potential) rather than naturally available to the environment.
Critique of BBEST Recommendations and Analysis	First off, the BBEST did an admirable job pulling this together in a compressed timeline with the guidance essentially being crafted as they went. While I may disagree with parts of the BBEST recommendations I'm still impressed with the way the team conducted their work, achieved consensus, and produced a well-documented report.

**Sabine-Neches BBASC  
Member Comments**

Topic	Statement
Work Plan	One of the nice products from their work is the database of literature on environmental flows that Dr. McBroom at SFA was involved with compiling. I hope that the BBASC can encourage SFA or another agency to update and maintain the currentness of this resource and make it publically available to the BBASC and others.
Critique of BBEST Recommendations and Analysis	I'm struck by the significance of the time limitations on the BBEST. Some analyses were left rough or unfinished (TPWD identified some places where recommendations had been made without the benefit of final calculations or other changes) and uncertainty is rightfully acknowledged in the recommendations report. For these reasons I support the adaptive management approach in the work plan kicking in sooner rather than later. In considering the work plan I support holding periodic reviews more frequently, rather than less. Rather than, say, once every 10 years or once every 5 I think we ought to prescribe an integrated calendar of reviews, e.g., 1 year out, 3 years, 6 years, and 10 years, with specific studies and monitoring (e.g., focal species, estuarine wetland and floodplain forest habitats, wetland primary production and salinity) conducted in-between reviews so that environmental flow recommendations and implementation strategies are tuned or adjusted as necessary. The first review and monitoring may perhaps be scheduled even prior to implementation of the eventual standards, since I believe there will be a full year of TCEQ rulemaking and public input before implementation. I hope that TCEQ can present the BBASC with some guidance on how to approach the work plan, if funds may be made available for implementing monitoring, etc.
Work Plan	(Continued) Buried in that thought above are some ideas for what ought to be monitored to measure populations of focal species, water quantity and quality parameters, and health of key ecosystem components in order to ensure that these persist under the practice of the recommended environmental flow regime. I would like to expand on these ideas and produce some more detailed recommendations for the work plan as we get into it further.
Critique of BBEST Recommendations and Analysis	The comments from TPWD are valuable and more thorough than I can be - I haven't echoed them all here although many of the points below are also contained in the TPWD comments. I still haven't waded through all the appendices but I can offer these comments on the BBEST recommendations for now:
Critique of BBEST Recommendations and Analysis	1) The BBEST recommendation that current conditions are sound (p. 14) appears to be justified on water quality criteria; not ecological criteria. Species of fish and mussels are not presently on a sustainable trajectory under current conditions, and altered flow regimes have been identified as a contributor (among others) to these declines. I agree with TPWD that there should be some acknowledgement of this in the report, and I would go so far as to say that this recommendation/finding is incorrect. Historic conditions were sound, present conditions are improved from a water quality standpoint over conditions several decades ago, but are measurably degraded. Achieving a sound ecological environment would require some improvements and recovery of habitats and species. I think that the report would be improved with a more full accounting of present conditions - the USACE Sabine-Neches Waterway CIP Draft EIS (2009) describes the present-day estuarine environment very differently from this recommendation.
Critique of BBEST Recommendations and Analysis	2) Forested wetlands health should be a key component of the definition of an ecologically sound environment. I would have preferred to see it be a part of the BBEST recommendations and flow prescriptions, but I will nominate it as an area of study/refinement for the work plan. The National Park Service manages 6000 acres of largely-intact freshwater marsh (i.e., not converted to open water) and cypress-tupelo forested wetlands below the Neches Saltwater Barrier. Freshwater marshes in southeast Texas and southwest Louisiana have been declining, due in large part to the combined effects of reduced sediment delivery, saltwater intrusion, subsidence, and global sea-level rise. The mechanisms of wetland loss are well-understood: wetland loss results when high salinity decreases the biological productivity of freshwater marsh vegetation, leading to a decrease in primary productivity and organic matter accumulation which, in turn, results in greater submergence because the rate of increase in marsh elevation cannot keep up with the rate of submergence due to relative sea-level rise. The death of wetland vegetation often results, followed by peat collapse, erosion, and wetland loss (SWG. 2005. Conservation, Protection and Utilization of Louisiana's Coastal Wetland Forests: Final Report to the Governor of Louisiana by the Coastal Wetland Forest Conservation and Use Science Working Group. Baton Rouge, 102pp.). The most extensive losses of interior coastal wetlands in Texas have occurred along the Neches River Delta where 12,632 acres of marshes have been converted to open water. The area of loss represents more than 90 percent of the marshes in the lower Neches River delta (USACE. 2009. Draft Environmental Impact Statement for Proposed Sabine-Neches Waterway Channel Improvement Project, Southeast Texas and Southwest Louisiana, Volume II. Galveston, TX. 1565pp.).
Critique of BBEST Recommendations and Analysis	3) As TPWD does, I question the use of the full period-of-record as a basis for making flow recommendations. Pre-impoundment data should be used where available to calculate and model flow regimes that support the full suite of native species and fluvial processes. The pre-impoundment and post-impoundment data for Neches-Evadale and Sabine-Ruliff (two large inflow contributors to the tidal portions of the rivers and the estuary) show significant differences in the hydrograph.

**Sabine-Neches BBASC  
Member Comments**

Topic	Statement
Critique of BBEST Recommendations and Analysis	4) Reservoir storage levels as a determinant for defining hydrologic conditions (dry, average, wet) seems to have some limitations (recommendation 5; p. 15). I recommend defining dry, average, and wet on data that is not constrained by water management. Gages in uncontrolled streams, indices of drought, etc., seem intuitively to be a better choice. Reservoirs have been drawn down deliberately for reasons that are independent of precipitation and hydrologic conditions (e.g., dewatering of Steinhagen Lake for salvinia control).
Critique of BBEST Recommendations and Analysis	5) In the HEFR tables for Sabine-Ruliff and Neches-Evadale there are instances where the recommended high pulse flow is a lesser volume than the corresponding average base flow condition. I'm also not clear in which circumstances the pulse flows have been chopped below the HEFR calculation due to overbanking at that historical flow rate. I'm a little fuzzy on HEFR so I may have missed the implications from the different methods used at different gages to calculate pulse flow durations and volumes (p.103-104). The pulse flows and overbank flows are integral to the floodplain forested wetlands of the Jack Gore Baygall and Neches Bottom units of the Preserve (and elsewhere). I recommend against less frequent occurrence of seasonal high pulse flows - termed an acceptable risk in the HEFR tables and elsewhere in the report - and suggest instead an environmental flow regime that hues as closely as possible to the frequency, volume, and duration of historic pulse flow events (pre-impoundment).
Critique of BBEST Recommendations and Analysis	6) Accepting that there are unknowns and risks with any recommendation - I'm more comfortable with the subsistence flows being defined by the 5th percentile flow, as opposed to the lower figures calculated in the HEFR runs. I think that the BBASC should also recommend that subsistence flows not fall below the 5th percentile or persist for longer than is demonstrated in the pre-impoundment historic data. I think the TPWD comments said this better than I did: additional constraints should be added to keep the frequency and duration of flows below, at, and immediately above subsistence levels as close to as historically occurred as possible.
Critique of BBEST Recommendations and Analysis	7) A notable gap in the recommendations report is the recommendation that fluvial matrices (i.e., the HEFR-calculated stream inflow values) are adequate for maintaining a sound ecological environment downriver in the estuary (recommendation 9; p. 18). This leaves the tidal portions of the Neches River below the Saltwater Barrier (and other areas) and associated habitats in an information gap, well below the Evadale and Village Creek gages and subject to ongoing effects from the Sabine-Neches waterway. The 6000 acres that the Preserve manages below the Saltwater Barrier will be subject to effects from the USACE channel improvement project: the Hydrodynamic-Salinity modeling by the USACE forecasts an increase in salinity in the upper Neches River from 0.1 ppt to 0.26 ppt under low flow conditions; salinities in the cypress-tupelo swamps in the upper Neches reaches are predicted to increase by 0.3 ppt; and surface water elevations are expected to increase an average of 0.8 inch in the upper reaches of the Neches River due to greater tidal influence (USACE 2009). How will summer subsistence flows (e.g., 228 cfs at Evadale or the 400 cfs minimum pass-through at the Saltwater Barrier) prevent saltwater intrusion from impacting freshwater marsh and cypress-tupelo wetlands? The example I'm using is the Preserve but much of the wetlands closer to Sabine Lake have obviously been impacted more heavily by the ship channel. How much freshwater flow in the tidal reaches of the Neches are necessary to offset encroachment? This is a key question to address in the work plan - if not sooner.
Critique of BBEST Recommendations and Analysis	I apologize if my limited understanding of HEFR or the other methods used by the BBEST have led me to any incorrect assumptions. I'm hopeful that the BBEST and the state agencies will continue to be available to the BBASC to help clarify some of the points that have been raised. But I also hope that some of these points may be adopted by the BBASC as part of our set of recommendations to the TCEQ.