



February 18, 2010

Mark Wentzel  
Texas Instream Flow Program  
Texas Water Development Board  
P.O. Box 13231  
1700 N. Congress Avenue  
Austin, Texas 78711-3231

**Re: Draft Study Design for the Texas Instream Flow Program for the Middle and Lower Brazos River**

Dear Mr. Wentzel:

The attached comments communicate the Authority's comments and suggested changes to the above referenced draft report.

In general, the Authority recognizes that main stem and tributary reservoirs affect the flow regime in the Middle and Lower Brazos River; however, the effects are primarily related to flood storage and tend to increase base and subsistence flows.

Also to adequately link flow regime components to biologic indicators, appropriate species should be selected based on their reliance on the various flow regime components. As discussed more fully in the attachment, the Authority recommends a more diverse selection of species to broaden the variability in the recommended flow regime to support the entire ecological environment.

The Authority appreciates the opportunity to comment on the draft report. If you have any questions about these comments, please call me at 254-761-3189.

Sincerely,

PHILIP PRICE

Comments on Draft Study Design for the Instream Flow Study of the Middle and Lower Brazos River

Page	Paragraph	Comment
5	2	The hydrology of the middle and lower Brazos has been affected by the operation of <b>flood storage reservoirs in the watershed since 1951</b> .
5	2	The middle and lower Brazos are largely uncontrolled and marginally influenced by reservoirs. Federal flood storage, primarily located on tributary rivers, reduce flood peaks and increase the subsistence and base flow regimes. However, the lower Brazos River is one of North America's relatively intact flood plain rivers.
10	2	It should be noted from Fig. 3 that the reduction in flows at the Waco gage greater than 30,000 cfs represent less than 1 percent of the time. And that flows that have been reduced between 3000 cfs and 9000 cfs represents less than 12 percent of the time. These variances are so slight that impacts are barely noticeable on the graph. If these slight reductions are to be explained in the text, it should also be noted that the flows between 10,000 and 25,000 cfs have increased.
10	3,4	The increase in flows at the Richmond gage can also be explained by hydrogeneration from Lake Whitney, extended releases from Federal reservoirs to evacuate flood storage, and releases from water supply to honor downstream contractual commitments.
10	5	... construction and operation of reservoirs in the basin as a whole may have affected the hydrology of the middle and lower Brazos River <b>primarily by increasing base and subsistence flows</b> .
13		Footnote Table 3, Original capacities shown are not representative of current capacities, recent TWDB volumetric surveys indicate a reduced conservation storage as a result of sediment deposits over time.
14	3	There appears to be an issue with water demands between 1980 and 2000. The total water diversion from surface and ground water is shown to be 905,000 af in 1980. The total water diversion from surface and ground water in 2000 is shown as 745,000. There is no explanation for the 160,000 af decrease in total demand between years 1980 and 2000.
15	1	States that 62 fish species have been reported from the mainstem of the middle and lower Brazos River, and references Table 5. Table 5 contradicts this statement, as 68 species are listed.
15	4	" <i>Notropis Shumardi</i> " is misspelled – should be " <i>Notropis shumardi</i> "
18	table	" <i>Percina carbonia</i> " is misspelled – should be " <i>Percina carbonaria</i> "
29	1	The Allens Creek study did not investigate flows in the range of subsistence. The Allens Creek study used 7Q2 as the lower limit of the analysis and concentrated on base conditions. Subsistence flows in the lower basin are less than 7Q2.
29	3	1.2.1 Hydrology see comment page 5 paragraph 2
32	table	Include woody debris in the conceptual as an input to the model along with fine and coarse sediment. Woody debris is recognized as contributing to input to habitat modeling (p 51, 54, 56 and 60).
32	table	Consider changing the description of the Water input in the conceptual model. "Influenced by upstream reservoirs" See comment page 5 paragraph 2.
35	2	It should be noted that sport fish used as indicator species incorporate economic and social components of the overall goal or vision originally agreed upon by the study design workgroup. Bacteria used as an indicator of recreational health of the waterbody also addresses social and potentially economic goals.
38,39	tables	<b>Consider the following key species as indicators:</b> White-faced Ibis, Interior Least Tern, Houston toad, Alligator snapping turtle. A description with justification is listed below.

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38,39	tables	<b>White-faced Ibis</b> , State Listed Threatened; potential or known presence within Brazoria, Fort Bend, Waller, Austin, Washington, Grimes Counties; prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats; could be linked to HFP and overbank flow regimes in riparian areas.
38,39	tables	<b>Interior Least Tern</b> , Federally Listed Endangered, State Listed Endangered; potential or known presence in McLennan, Falls, Milam, Robertson, Burleson, Brazos, Washington, Grimes, Waller, Austin, Fort Bend and Brazoria Counties; nests along sand and gravel bars within braided streams, rivers; also known to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony; could be linked to HFP and overbank flow conditions.
38,39	tables	<b>Houston toad</b> , Federally Listed Endangered, State Listed Endangered; potential or known presence in Milam, Robertson, Burleson, Brazos, Washington, Waller, Austin, and Fort Bend Counties; endemic; sandy substrate, water in pools, ephemeral pools, stock tanks; breeds in spring especially after rains; burrows in soil of adjacent uplands when inactive; breeds February-June; associated with soils of the Sparta, Carrizo, Goliad, Queen City, Recklaw, Weches, and Willis geologic formations; could be linked to overbank flow conditions in riparian areas.
38,39	tables	<b>Alligator snapping turtle</b> , State Listed Threatened; potential or known presence in Falls, Milam, Robertson, Burleson, Brazos, Washington, Grimes, Waller, Austin, Fort Bend and Brazoria Counties; perennial water bodies; deep water of rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near deep running water; sometimes enters brackish coastal waters; usually in water with mud bottom and abundant aquatic vegetation; may migrate several miles along rivers; active March-October; breeds April-October.
38,39	tables	No mention in report of specific riparian plant species as indicator.
39		The concept of using fish species that are imperiled, vulnerable, or decreasing in abundance as key species in the analysis seems tenuous. It would be problematic trying to relate their presence, absence, or relative abundance directly to instream flow, since the chances of collecting them at all would be low due to their rareness. As such, they would not seem to be reliable indicators of instream flow suitability. Two of the "key species" listed at the bottom of p. 39 fall into this category - chub shiner ( <i>Notropis potteri</i> ) and alligator gar ( <i>Atractosteus spatula</i> ).
48	6	Tier 3 assessment to locate representative Study Sites within each selected reach lacks detail. The map that is referenced does not give a specific description of the area or the extent of the study area. We recommend labeling the map with the name of the study site and include a description of the proposed selected area and the reason for the selection.
56	2	The list of key species presented here doesn't match the list at the bottom of p. 39. Burrhead chub ( <i>Macrhybopsis marconis</i> ) doesn't occur in the Brazos Basin (Table 5; Thomas, Bonner, & Whiteside 2007).
57	2	"San Antonio River" should be "Brazos River". It appears that portions of this section were cut and pasted from a report for the San Antonio River basin.
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