

Colorado-Lavaca Basin and Bay Expert Science Team
January 18-19, 2011 8:30am
Action Items and Consensus Decision Points

The Colorado-Lavaca BBEST met on January 18th and 19th at LCRA in Austin. All members were present.

JANUARY 18 SESSION

Consensus Decision: December 21 Consensus Points and Action Items

The group agreed to postpone adoption of the consensus decision points and action items from the December 21, 2010 meeting.

Discussion and Consensus Decision: No-flow Periods

Members discussed the proposed approach toward no-flow periods. [Consensus Decision] - The group agreed that the historical no-flow periods should be characterized and should not be artificially increased.

Discussion, Consensus Decisions, and Action Item: Subsistence Flows

The group discussed their approach to designating subsistence flows at the stream sites. They started with the Pedernales River at Johnson City gage as an example. The detailed summary analysis was reviewed. Water quality information showed no correlation between flow and dissolved oxygen (DO) or temperature, with infrequent occurrences of low DO. A default approach was proposed for subsistence values to take the highest of either the 7Q2, the 5th percentile flow (Q95), or 1 cfs. [Consensus Decision] – In applying this approach, the group agreed to subsistence flows of 7.2 cfs (winter), 4.4 cfs (spring), and 4.2 cfs (summer and fall) for the Pedernales River at Johnson City. Members discussed what should be done with sites that have had instream flow studies (i.e., Lometa, LSWP). It was suggested that those sites should use the study recommendations for subsistence flows. [Action Item] – Joe Trungale will compile the potential subsistence flow values for all the stream sites. TCEQ will supply 7Q2's from all sites that don't have a published value. There was discussion of using the study vs. the default subsistence values for the Colorado River at Austin site. [Consensus Decision] – For subsistence flows, the group agreed to the default approach for all sites except for Colorado River at Bastrop, Columbus, and Wharton, which would use the LSWP study values (applied seasonally).

Discussion and Consensus Decision: Overbank Flows

Joe Trungale explained his decision to switch from the quadratic equation to log-log regression in HEFR for determining pulse and overbank flow volumes (magnitudes and durations didn't change). The group first discussed overbank flows and looked at Joe's preliminary HEFR results for several gages as examples. The National Weather Service (NWS) flood stage was used for the overbank value, in the absence of published overbank numbers, but the frequency was selected based on the HEFR pulse value that it best approximates (1 per 1 year, 1 per 2 year, or 1 per 5 year), and keeping the recommended frequency at no more frequent than 1 per 2 year based on Leopold's work of approximate recurrence interval of channel forming flows. At some gages, where the

frequency is less than 1 per 2 years or greater than 1 per 5 years, the overbank frequency was “rounded” to the nearest interval. It was suggested that overlays (e.g., riparian/flood contours) could be used to further inform the decision of frequencies. [Consensus Decision] - The group arrived at the approach to use the NWS value at sites where there are no published values, at a frequency of historical occurrence rounded to the nearest frequency interval. Sites included in the LSWP study will use the study recommendations. This approach may be revisited based on what is presented regarding the geomorphology analysis.

Discussion, Consensus Decision, Action Item: Pulse Flows

Nolan Raphelt with TWDB presented results of a preliminary evaluation of effectiveness of HEFR flows in maintaining the channel at Colorado at Columbus and San Saba sites. The analysis indicated a significant reduction in discharge and bed material load such that the existing channels would not be maintained. It was mentioned that this may not be a realistic look at future hydrology. It was suggested that specifying a diversion limit may help to maintain channel integrity. Kathy Alexander (TCEQ) stated that TCEQ may have issues with a diversion limitation since it’s problematic to apply that without a lot of supporting information. Dave Buzan suggested coming up with text that says that some additional, unspecified flow beyond HEFR flows is necessary to maintain channel morphology. [Consensus Decision] – The group agreed to insert a narrative statement into every HEFR matrix stating that more water is needed to maintain the channel. [Action Item] – Dave will draft a statement for the group to evaluate at tomorrow’s meeting.

Members discussed the approach to pulse flow recommendations for sites that don’t have published values by looking at the preliminary HEFR numbers for the Pedernales River at Johnson City gage. Joe explained that the pulse flows are set up similar to how they’re done in the proposed TCEQ rule for the Sabine Basin. Dave recommended that these HEFR numbers become the recommendation. Rules for pulse flows were discussed. A larger pulse flow can also count for a smaller pulse flow. The central tendency value for volume and duration should be used. Annual pulses are accounted by calendar year. Pulse flow magnitudes and volumes should be rounded to 2 significant figures. High flow pulses that duplicate the overbank recommendation should be deleted. The discussion turned to what constitutes a pulse flow qualifying event. In the Sabine context, a pulse qualifies once it meets the magnitude and one of either the volume or duration. Members leaned toward a similar definition where the pulse event must meet the magnitude first, and continues until the volume is met or the upper range of the duration component. [Consensus Decision] - The group agreed to the HEFR pulse regime as a recommendation. [Action Item] – Joe will draft a proposed definition of qualifying event for the group to consider tomorrow.

Discussion and Consensus Decisions: Base Flows

The group began the discussion of base flow recommendations by considering the LSWP study sites (Bastrop, Columbus, and Wharton). They talked about how the base flow numbers in the study were derived, noting that no base wet numbers were included since base flows at that level represented a reduction in a particular habitat guild of interest for the study (i.e., blue sucker habitat). The LSWP and HEFR numbers were

compared to ensure that it is reasonable to eliminate the base wet flows. [Consensus Decision] – The group agreed to stick with the 2 levels of base flows recommended in the LSWP study at Bastrop, Columbus, and Wharton. The discussion turned to whether to apply base flow recommendations to the Austin gage (LSWP only recommended a subsistence flow for this location). One approach could be to extrapolate the LSWP Bastrop numbers up to the Austin site. Another approach would be to say that the Bastrop regime controls the Austin location. There was a suggestion that any numbers at the Austin gage are not very meaningful and should be dropped. [Consensus Decision] – The group agreed to not have any flow recommendations at the Austin gage. The group decided to adjourn for the day.

JANUARY 19 SESSION

Discussion and Consensus Decision: No-Flow Periods Language

Members discussed the draft narrative statements regarding no-flow periods provided by Dave Buzan. [Consensus Decision – With minor edits, the group approved the no-flow language and descriptive statistics format. The approved language will be incorporated into each relevant HEFR table.

Discussion and Consensus Decision: Geomorphology Language

Members discussed the draft language proposed by Dave Buzan regarding channel maintenance flows, which would also be included in the HEFR tables. There was debate as to whether to say that at 10-20% change in historical flow may change the channel and impact stream health. It was decided that that kind of statement be taken out of the language intended for the flow regime table, but it should be included in the text describing the geomorphic component of flow. [Consensus Decision] – With edits, the group approved language for the flow regime tables saying that additional flow is needed to maintain the stream channel, and that additional analyses outside the scope of the BBEST process would be needed to determine that flow.

Discussion and Consensus Decision: Qualifying Pulse Event Language

Members reviewed qualifying pulse event language proposed by Joe Trungale. [Consensus Decision] – With suggested edits, the group agreed to define a qualifying pulse event as one where the peak magnitude is met first, followed by the achievement of the pulse volume or duration. Once the next higher pulse tier magnitude is triggered, the accounting for volume and duration for that next tier is re-started. Higher tier events can also be counted toward meeting lower tier events.

Discussion and Consensus Decision: Pulse Frequencies

Joe presented his evaluation of frequency intervals where each flow regime has 5 tiers of pulse events (2 per season, 1 per season, 1 per year, 1 per 2 year, and 1 per 5 year; where one annual would be replaced with NWS flood stage value). [Consensus Decision] – After discussion, the group decided that if the NWS flood value exceeds the annual tiers (i.e., occurs less frequent than 1 per 5 years), then the annual tiers are high flow pulses and the NWS value is described as outside the interval. Any annual tiers that are greater than the NWS value are overbank flows.

Discussion and Consensus Decision: Base Flows

In continuing their discussion on base flows from yesterday's meeting, the group talked about how to use the Lometa study numbers at the Colorado River near San Saba site. The study numbers were compared to the HEFR numbers. Thom Hardy suggested that since the Lometa study didn't evaluate higher base flows, and since the lower-end base flows from HEFR and the study are reasonably comparable, he proposed that the 3 tiers of base flows from HEFR be adopted for this site. [Consensus Decision] – Members agreed to using HEFR base flows for the Colorado River near San Saba gage.

Discussion: Comparative Cross-Section Method (CCM)

Thom Hardy gave an overview of his cross-section method using the San Saba River site as an example. The software looks for a cross-sectional discharge, wetted width, and slope in its database within 10% of the measured features from the San Saba. Once a "match" is found, through either a comparable analog in the database or a computed one using Manning's equation, substrates are then compared. When reasonable equivalents are identified, flow-habitat relationships are calculated (rate vs. percent maximum habitat). A rough evaluation of the Lometa vs. CCM flow-habitat curves (guilds not exactly the same) indicated that they were generally comparable.

Discussion and Consensus Decisions: Texas Water Resources Institute (TWRI) Document Preparation

TWRI staff handed out an example of the report look and format and a style guide. The report deadlines were reviewed: Jan 31 – edited text due to TWRI; Feb 9 – 1st draft of report due back to BBEST; Feb 15 – report discussion at BBEST meeting; Feb 18 – edits reviewed and changes made. It was mentioned that TWRI doesn't have to have all content by the 31st, but every effort should be made to turn in as much as possible by then. [Consensus Decision] - A decision was made to add the determination of sound ecological environment into the detailed fact sheets for each site, and not in a separate section. It was also decided to drop Chapter 5 and merge it into Chapter 2. Changes to the Table of Contents will need to be made soon and sent to TWRI. [Action Item] - Richard Hoffpauir will set up Draft, Review, and Final folders on a ftp site to accommodate storage of work products at the different stages of development. The hydrology subcommittee agreed to meet soon to suggest an approach to dealing with attainment frequencies and hydrological conditions. [Consensus Decision] – The group agreed to add a flow regime implementation/interpretation discussion in section 4.2 of the report.

Discussion and Consensus Decision: Base Flows (Continued)

Thom Hardy recommended that the group accept the HEFR base flows with accompanying language justifying the decision based on comparisons using site-specific data. The Elm Creek gage was brought up, where HEFR has zeroes for all 3 tiers of base flows in the summer and fall. It was suggested that there be one level of base flow for all seasons at Elm Creek: 4 cfs (winter), 5 cfs (spring), 1 cfs (summer and fall). [Consensus Decision] – The group agreed to use HEFR base flow numbers for all sites except for the LSWP sites (Bastrop, Columbus, and Wharton) and the Elm Creek site.

Discussion and Consensus Decision: Matagorda Bay Freshwater Inflows

Melissa Fontenot proposed that the MBHE numbers be adopted, except instead of monthly intervals, there would be inflow recommendations for spring, fall, and intervening periods. The group looked at Richard Hoffpauir's estimate of inflow volume to the bay from just the instream recommendation, and the volume was reasonably close to the proposed long-term volume that would result from the MBHE numbers. Kathy Alexander suggested that a definition of the seasons be added to the document. [Consensus Decision] – Members agreed to adopt the MBHE inflow recommendations within a seasonal adaptation, and to include language explaining such things as the seasonal definitions.

Discussion and Consensus Decision: Lavaca Bay Freshwater Inflows

Bryan Cook gave an overview of the methods used to derive recommendations for Lavaca Bay. He said there were good correlations between inflows (Lavaca River and Garcitas Creek) and salinity. The desired salinities were driven by oyster suitability, similar to the MBHE approach. Thom Hardy suggested incorporating suitability curves of other indicator species from the MBHE study. It was pointed out that the resulting inflow numbers were a little lower than the 2006 FINS study numbers. It was also suggested to add a provision that would prevent prolonging a drought, to consider a week-long flushing flow to reduce upper bay salinities (similar to MBHE), and to round numbers to 2 or 3 significant figures. [Consensus Decision] – The group agreed to the proposed method with the suggested modifications.

Review of Remaining Issues/Assignments

- Contribute work plan/monitoring ideas to Cathy Wakefield
- Bryan Cook to do additional work on Lavaca Bay
- Thom Hardy to look for any instances of inappropriate base flow data
- Joe Trungale to produce subsistence/critical low-flow table
- Joe to run log-log regressions in HEFR tables
- All members to consider how to format flow regime tables, possibly similar to TCEQ's proposed rule
- Thom to cross-check sites for sentinel/T&E species not already covered
- Richard Hoffpauir to provide Matagorda Bay inflow volume spreadsheet to Estuary subcommittee
- Next BBEST meeting on February 15th