Pulse Flow and Channel Maintenance Flow Regime Components: Dave Buzan, Kirk Kennedy, and Bryan Cook (not reviewed by the entire BBEST)

Pulse flow regime:

- Five levels of pulse flow: two pulses per season, one pulse per season, one pulse per year, one pulse per two years, and one pulse per five years
- Implementation suggestion: Pulse starts when flow exceeds the flow trigger and lasts until the volume is passed or the duration transpires, whichever comes first. If flow increases above a higher pulse trigger during a pulse event, the volume and duration of the higher pulse apply. For example, if the first pulse in a season is the one per year pulse flow, that pulse satisfies the requirements for the one per season and one, two per season pulse.

  Concho River (p. 2-57)

  Example 1: In the winter, the flow rises above 61 cfs and the "2 Pulses per season" trigger is passed. If the flow never rises above 160 cfs which is the "1 Pulse per season" trigger, 61 cfs is allowed to pass until 400 acre-feet passes or 10 days transpire, whichever comes first.

  Example 2: In the summer, the flow rises above 32 cfs, the trigger for "2 Pulses per season" and keeps rising past 110 cfs, the trigger for "1 Pulse per season" and keeps rising more until it passes 5,200 cfs, which is the trigger for a "1 Pulse per 2 years". In this case, 5,200 cfs is allowed to pass until the volume of 23,400 acre-feet is passed or 23 days transpire, whichever comes first. Once this "1 Pulse per 2 years" passes, there is no more requirement for a "1 Pulse per season" or for one of the "2 Pulses per season" in that summer. The requirement for a "1 Pulse per year" in that year is also considered achieved.

Pulse flow recommendation:

- BBEST believes it is important that stakeholders understand pulse flows are important to maintain a sound environment at all the sites.
- Stakeholders communicate to TCEQ that pulse flows are important to maintain a sound environment at all sites.
- Pulse flow regime recommendations which are exceeded by the maximum possible diversion rate of a permit application, may apply to that permit.
- Proposed diversions that are substantially lower than any pulse flow recommendation may not have a pulse flow standard apply to their permits.
- Concho River Ex.
    - If an applicant requests a permit to take water and the applicant's maximum possible diversion rate is 10 cfs, pulse flow requirements would not apply to the permit because

the lowest pulse flow trigger is 32 cfs and the applicant could not divert the entire amount of any pulse flow.

Channel Maintenance Flow

Channel Maintenance Flow regime: "A quantity of flow in addition to flows provided by subsistence, base, pulse, and overbank flows proposed here would be needed to maintain channel morphology. Analysis by the BBEST at 3 sites across the basins (upper Colorado, lower Colorado, and Lavaca) and within the bounds of the analysis in this report indicates a range of average annual flows on the order of 77-93% of the average annual flow from 1940-1998 with the variability characteristic of the period of record maintains existing channel morphology. The specific flow needed to maintain the channel and its ecological functions will need to be determined on a project and site-specific basis.

Channel Maintenance flow recommendation to TCEQ:

- BBEST believes it is important that stakeholders understand channel maintenance flows are important to maintain a sound environment at all the sites.
- Stakeholders communicate to TCEQ that channel maintenance flows are important to maintain a sound environment at all sites.
- If an applicant requests an amount of water, the use of which will reduce the total annual flow by more than 7%, the applicant will evaluate the effect of the requested diversion on channel maintenance downstream of the proposed diversion. Based on that evaluation, the permit may require the applicant to take appropriate action to prevent significant degradation of the channel shape.