

Science Advisory Committee Background

Senate Bill 1639, 78th Legislature, created the Study Commission on Water for Environmental Flows (Study Commission) in 2003. The Study Commission was directed to "...study public policy implications for balancing the demands on the water resources of the state resulting from a growing population with the requirements of the riverine, bay and estuary systems including granting permits for instream flow dedicated to environmental needs of bay and estuary inflows, use of the Texas Water Trust, and any other issues that the Study Commission determines to have importance and relevance to the protection to environmental flows."

The Study Commission appointed a Science Advisory Committee. Members were Robert J. Brandes, PhD, B.L. Harris, PhD, Larry Hauck, PhD, Clay J. Landry, Mitchell Mathis, PhD, Paul A. Montagna, PhD, Dwight Shellman, Jr., Jeff Taylor and George Ward, Jr., PhD. The SB1639 SAC was charged with analyzing existing hydrologic conditions, evaluating current tools and procedures used to assess environmental flow needs, identifying ecological parameters to be considered when evaluating environmental flow needs, and providing any other technical information of benefit to the Study Commission.

The Science Advisory Committee issued its report on October 26, 2004. Eight recommendations were included in the report:

1. A "one-size-fits-all" answer is not correct within Texas.
2. Future scientific studies need to focus in more detail on the specific relationships between sound ecological environment and streamflows.
3. Completion of the Texas Instream Flow Program Studies and improvement of the bays and estuaries freshwater inflow studies are essential.
4. Participation by stakeholders and water interests in the environmental flow program and rigorous scientific review are of paramount importance to achieving acceptable environmental flows.
5. For evaluating environmental flows for rivers and streams, statistical desk-top methods and associated technical analyses must be enhanced to facilitate regulatory permitting actions until such time as the Texas Instream Flow Program is completed.
6. The TWDB's State Methodology and the TPWD's "verification" process use to develop freshwater inflow recommendations for the state's bays and estuaries exhibit scientific shortcomings that must be addressed.
7. Adaptive management and precautionary principle methods must be incorporated into the scientific study, management strategy implementation, and regulatory permitting phases of future environmental flow activities.
8. There are both regulatory strategies and market-based strategies that can be used to provide for environmental flows.

The Study Commission report, submitted to the Legislature December 21, 2004, formed the basis for Senate Bill 3, Article 1, of the 79th Session. Although SB3 did not pass in 2005, Governor Perry, through Executive Order RP50, created the Environmental Flows Advisory Committee (EFAC). The EFAC was directed to examine relevant issues and make recommendations for TCEQ Commission action and legislation on methods for making future decisions to protect instream flows and freshwater inflows, while integrating such needs with human needs, including methods to address allocation of flows during drought conditions, using the December 2004 report of the Study Commission as a starting point. The EFAC appointed a new Science Advisory Committee. Members included Robert J. Brandes, PhD, George Ward, Jr., PhD, Paul A. Montagna, PhD, Larry Hauck, PhD, and Kirk O. Winemiller, PhD.

Science Advisory Committee Background (continued)

The EFAC Science Advisory Committee presented its recommendations to the Governor's Environmental Flows Advisory Committee on August 21, 2006:

1. If the EFAC determines that a definition for a "sound ecological environment" should be incorporated into legislation, then it is recommended that the following be considered: A sound ecological environment is one that sustains the full complement of native species in perpetuity, sustains key habitat features required by those species, retains key features of the natural flow regime required by these species to complete their life cycles, and sustains key ecosystem processes and services.
2. More extensive review and guidance by stakeholders and the scientific community should be incorporated into the Texas Instream Flow Program.
3. The TCEQ, TWDB and the TPWD should engage as soon as possible the services of qualified professionals to review currently available instream environmental flow assessment tools and to develop one or more desk-top methodologies specifically applicable to Texas river and stream conditions.
4. The significant shortcoming exhibited by the TWDB's State Methodology and the TPWD's "verification" process that are used to develop freshwater inflow recommendations for the state's bays and estuaries must be addressed, and the basic environmental flows process previously set forth in Article 1 of Senate Bill 3, as it was considered by the 79th Legislature, provides an appropriate means for addressing these shortcomings.
5. The TCEQ, TWDB and the TPWD should engage as soon as possible the services of qualified professionals to review existing bay and estuary inflow assessment tools and available data and to develop one or more alternatives or supplemental methodologies that could be employed with results from the State's ongoing bay and estuary work as part of the overall process of establishing appropriate interim levels of freshwater inflow requirements for bays and estuaries.
6. The TCEQ, TWDB and the TPWD should take extensive measures to assure that input from stakeholders and water interests are fully incorporated into the State's environmental flow programs and that methodologies and results from these programs are subject to rigorous scientific review as part of the programs themselves.
7. Adaptive management and precautionary principle methods should be incorporated into all future phases of environmental flow activities, and the proposed instream flow and freshwater inflow adjustments for new permits or permit amendments, as stipulated in Article 1, Senate Bill 3 as it was considered by the 79th Legislature, provides an appropriate mechanism for incorporating adaptive management and precautionary principle methods into the TCEQ's water rights permitting process.
8. Pursuant to provisions of Article 1 of Senate Bill 3 as it was considered by the 79th Legislature, if considered appropriate by an individual Basin and Bay Area Stakeholders Committee, the function of the proposed Basin and Bay Expert Science Teams could be incorporated into individual Basin and Bay Area Stakeholders Committee as deemed appropriate and necessary.

Overview of Responses to EFAC SAC Recommendations

Recommendation 1 - “Sound Ecological Environment” definition

Although Senate Bill 3 as passed by the 80th Legislature did not specifically include the definition for a “*sound ecological environment*” as proposed by the SAC, it does include the term in the definition of “environmental flow regime”:

“ ‘Environmental flow regime’ means a schedule of flow quantities that reflects seasonal and yearly fluctuations that typically would vary geographically, by specific location in a watershed, and that are shown to be adequate to support a *sound ecological environment* and to maintain the productivity, extent, and persistence of key aquatic habitats in and along the affected water bodies.”

The term “Sound Ecological Environment” is also used in the description of “appropriate environmental flow standards”: “The commission by rule shall: (1) adopt appropriate environmental flow standards for each river basin and bay system in this state that are adequate to support a *sound ecological environment*...”.

Recommendation 2 – Incorporate more extensive review and guidance into the Texas Instream Flow Studies Program

The Texas Instream Flow Program finalized the Technical Overview Document (TOD) in May 2008. Draft versions of the TOD were reviewed by the National Research Council as well as staff from other state and federal agencies and river authorities. Chapter 4 of the TOD outlines both the Peer Review and Stakeholder Input Processes. This summer the Texas Instream Flow Program is conducting public meetings and workgroup meetings in the Lower Sabine, Middle and Lower Brazos and Lower San Antonio River Basins.

Recommendation 3 – Review desk-top methodologies

A Technical Review Group (TRG) was established by the Texas Commission on Environmental Quality (TCEQ) in 2007 to review the state's current desk-top methodologies for evaluating and establishing appropriate levels of environmental flows for Texas rivers and streams. They recommended that in the absence of any further information the TCEQ continue to apply the Lyons Method as a desk-top approach for permitting purposes. In addition, the TRG has recommended that new field studies be undertaken as soon as possible to assess the appropriate spatial boundaries for regional adjustments to the Lyons method and that any future detailed studies undertaken by the State agencies or water rights applicants be designed and conducted to provide information that would be useful specifically for refining an appropriate desk-top method for the State.

Overview of Responses to EFAC SAC Recommendations (continued)

Recommendations 4 and 5 - Improve State Methodology

The state agencies have initiated a stakeholder process for revisiting the freshwater inflow State Methodology for Galveston Bay. A Technical Subcommittee was formed and some key technical tasks identified. The Technical Subcommittee members have looked into the merits of using the TPWD fish sampling data, rather than harvest data for generation of the regression equations and have also revisited the statistical methodology for generating the equations, specifically on how to identify outliers. Significant progress has been made and the Technical Subcommittee expects to provide a status report back to the Galveston Bay Stakeholder group by the end of the calendar year. TWDB staff is exploring better alternatives for TxRRR (the rainfall-runoff simulation model) and TxBLEND (the hydrodynamic simulation model). TWDB also brought in an independent expert to assess and seek to improve statistical methodologies. In partnership with UT-CRWR, the TWDB is developing a Texas Hydrological Information System (HIS) tool to improve access to federal, state and local environmental data. Finally, the Freshwater Inflow Workgroup, which includes agency staff as well as external stakeholders, has resumed quarterly meetings. The LCRA-SAWS Water Supply Project has also explored alternative approaches for addressing assessing the health of Matagorda Bay.

Recommendation 6 – Assure stakeholder input in State’s environmental flow programs

See Items 2, 4 and 5 above.

Recommendation 7 – Adaptive Management

This recommendation was incorporated into SB3 as passed by 80th Legislature.

Recommendation 8 – Basin and Bay Expert Science Teams

This recommendation was incorporated into SB3 as passed by 80th Legislature.