



Environmental Flows

A sound natural environment is essential for maintaining the quality of life enjoyed by Texans and a strong state economy. Healthy aquatic ecosystems conserve biodiversity and support many industries, including recreation, tourism, commercial fishing, transportation, and water supply. The term environmental flow is used to describe the quantity, quality, and timing of water flows needed to maintain ecologically healthy riverine and estuarine ecosystems.

As early as 1968, with the publication of the first state water plan, Texas recognized the potential impact of water development on the ecology of bays and estuaries. Subsequently, through a series of directives from the Texas Legislature, the Texas Water Development Board (TWDB), Texas Parks and Wildlife Department, and Texas Commission on Environmental Quality (TCEQ) have worked to identify, recommend, and ensure the protection of environmental flows within rivers and to the estuaries.

With the state's population expected to increase by 73 percent over the next 50 years, the demand for water is anticipated to exceed current supply, requiring increased use of surface water and groundwater resources. Despite existing efforts and regulations for environmental flows, the need persists to ensure sufficient water continues flowing in our rivers and to the estuaries to maintain a healthy ecological environment.

Senate Bill 137 (1975), House Bill 2 (1985), Senate Bill 683 (1987) – Freshwater inflows

Early legislation directed the state's natural resource agencies to conduct studies to understand and determine the effects of and needs for freshwater inflow to support a sound ecological environment in the state's estuaries. Study reports identifying recommended volumes of freshwater inflow—to provide ecological support and to achieve fisheries management goals—have been completed for each of the major estuaries, in addition to numerous other supporting studies. Additionally, the TCEQ was directed to include permit conditions to maintain environmental flows when issuing water rights permits within 200 river miles of the coast.

Senate Bill 2 (2001) – Instream flows

In 2001, the 77th Texas Legislature similarly directed the state's natural resource agencies to conduct studies to determine the flow conditions necessary to support a sound ecological environment in the state's rivers and streams. Work has been accomplished for four basins including for the

middle Trinity and lower Guadalupe rivers, and final study reports have been published for the lower San Antonio River (2017) and middle and lower Brazos River (2018). Study results are to be used by the TCEQ when reviewing a water management plan, water right, or interbasin transfer.

Senate Bill 1639 (2003) – Study Commission on Water for Environmental Flows

The 78th Texas Legislature directed a commission to study public policy implications for balancing the demands on the state's water resources and evaluating options for providing adequate environmental flows to ensure a sound ecological environment of the state's rivers and estuaries.

Senate Bill 3 (2007) – Establishing environmental flow standards

Detailed instream flow and freshwater inflow studies require several years to complete and, when finished, provide flow recommendations for a relatively small portion of the state. Recognizing the need to identify appropriate amounts of water for the environment in a shorter timeframe, the 80th Texas Legislature created an accelerated, stakeholder-driven process for developing instream flow and freshwater inflow standards for the major river basins and associated bay systems of the state.

The process relies on using existing information and best available science to develop the initial recommendations that inform the regulatory standards, followed by an iterative adaptive management process to refine the standards. It involves a statewide Environmental Flows Advisory Group and Science Advisory Committee, with specific basin and bay area stakeholder committees and expert science teams, as well as technical and administrative support from the TWDB, Texas Parks and Wildlife Department, and the TCEQ—which establishes the regulatory standards.

Senate Bill 3 identified seven priority basin and bay systems (see map) for which the development of environmental flow regime recommendations has been completed. Between 2011 and 2014, the TCEQ carried out a rulemaking process to adopt instream flow standards at 96 locations within seven major river basins and freshwater inflow standards for five estuaries (see Table 1). An adaptive management component allows for the basin and bay area stakeholder committees to consider refinement of these standards at least every 10 years. For the initial seven priority basin and bay systems, adaptive management is ongoing. The remaining Canadian,

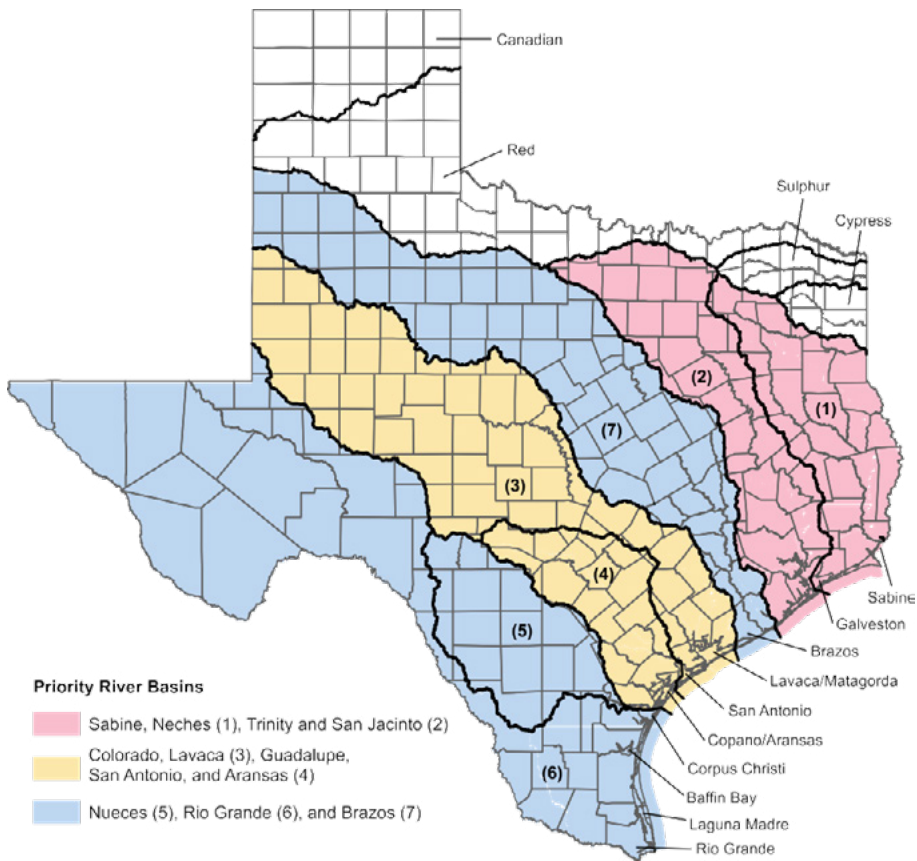
Red, Sulphur, and Cypress basins have not yet been scheduled to begin the process.

The adaptive management phase is guided by basin-specific work plans describing additional data and scientific studies necessary to allow for the validation or refinement of the environmental flow analyses, recommendations, or adopted standards—and potential strategies to achieve those standards. Adaptive management work plans have been developed by stakeholder committees for the Sabine-Neches, Trinity-San Jacinto, Brazos, Colorado-Lavaca, Guadalupe-San Antonio, and Nueces basins. Since 2014, the TWDB has provided funding to support the collection and analysis of environmental flow information for more than 50 projects identified in the work plans.

Table 1. Schedule of the effective rule date for adopted environmental flow standards and the first adaptive management review of the adopted standards.

Basin-Bay	Rule effective date	Revision schedule
Sabine-Neches	5/15/2011	5/15/2021
Trinity-San Jacinto	5/15/2011	5/15/2021
Brazos	3/6/2014	3/6/2024
Colorado-Lavaca	8/30/2012	8/30/2022
Guadalupe-San Antonio	8/30/2012	8/30/2022
Nueces	3/6/2014	3/6/2024
Rio-Grande	3/6/2014	3/6/2024

Priority River Basins and Bay Systems



For more information, visit www.twdb.texas.gov/surfacewater/flows/index.asp or www.tceq.texas.gov/permitting/water_rights/wr_technical-resources/eflows, and refer to the TCEQ Adopted Environmental Flow Rules at www.tceq.texas.gov/permitting/water_rights/wr_technical-resources/eflows/rulemaking, or contact Dr. Carla Guthrie, Director, Surface Water Division carla.guthrie@twdb.texas.gov, 512-463-4179