



Improving Water Quality along the Lower Texas Coast A TMDL Project for Bacteria

The Texas Department of State Health Services has closed portions of Copano Bay to oyster harvesting due to high concentrations of bacteria. In addition, a TCEQ assessment in 2004 found that the tidal segments of the Mission and Aransas rivers are not suitable for swimming or wading—activities referred to as “contact recreation” in the state’s standards for surface water quality—due to elevated bacteria concentrations.

The TCEQ initiated a total maximum daily load project to determine the measures necessary to restore water quality in Copano Bay and the tidal portions of the Mission and Aransas rivers. The goal of a TMDL is to determine the amount (or load) of a pollutant that a body of water can receive and still support its designated uses. The allowable load is then allocated among the categories of sources within the watershed, and stakeholders work with the state to develop measures that reduce pollutant loads.

Bacteria are commonly found in the intestines of warm-blooded organisms such as humans, livestock, poultry, cats, and dogs. Bacteria from human and animal waste often indicate the presence of disease-causing microorganisms, which pose a threat to public health for people who consume raw oysters or engage in contact recreation.

Learn more about the TCEQ’s strategy for managing the quality of Texas surface waterways by reading *Preserving and Improving Water Quality*, available on our website at <www.tceq.texas.gov/goto/tmdl/>.

Project Watershed

The watersheds of Copano Bay (Segment 2472), Mission River Tidal (Segment 2001), and Aransas River Tidal (Segment 2003) lie within the San Antonio–Nueces Coastal Basin. The basin drains a 2,652-square-mile area in the coastal plains between the San Antonio and Nueces Rivers. The primary sources of fresh water in the area are the Mission and Aransas rivers. The project watershed includes portions of Aransas, Refugio, San Patricio, Bee, Goliad, and Karnes counties. Cities include Rockport, Refugio, Sinton, Taft, Beeville, and Bayside.

The lower Texas coast is home to diverse flora and fauna. Shrimp, crab, and oysters are sought after by both commercial fisherman and recreational anglers. Water quality plays a vital role in the health, economy, and productivity of this area.



Project Development

This project was initiated by the TCEQ in 2004 in cooperation with other project partners including the Texas State Soil and Water Conservation Board (TSSWCB), Coastal Bend Bays and Estuaries Program, Texas General Land Office (GLO), Texas Water Resources Institute (TWRI), University of Texas Center for Research in Water Resources (CRWR), and Texas Department of State Health Services (DSHS).

The TCEQ contracted with the CRWR to develop a water quality model of the bay and associated river systems. The TCEQ and CRWR presented the model to stakeholders in 2006. Stakeholders requested additional data about the sources of bacteria, which prompted the following data collection efforts.

- In 2008, Texas A&M–Corpus Christi completed a two-phase bacteria source tracking (BST) study on the tidal portions of the Mission and Aransas Rivers. The study was funded by the GLO.
- In 2010, the Nueces River Authority (NRA) completed a three-year project to collect and analyze effluent bacteria samples from wastewater treatment facilities in the watershed. This analysis was funded by the TSSWCB.
- In 2010, the NRA also completed a three-year, targeted collection of ambient water quality data

in the Mission and Aransas Rivers and their tributaries. Funding was provided by the TSSWCB.

- In 2010, the DSHS renewed its oyster harvesting advisory for parts of Copano Bay.
- Between 2008 and 2010, the TWRI, funded by the TSSWCB, conducted a livestock and wildlife population study (including feral hogs), a series of manure management workshops, and other rural outreach and education activities.

In 2010, the CRWR refined the water quality models and TMDL allocation estimates, incorporating the data and information collected since 2006.

In December of 2010, the TCEQ and TSSWCB presented the revised TMDL model to the stakeholders, along with the results of the studies of livestock populations and wastewater treatment facilities. Stakeholders expressed the following concerns at that meeting.

- The estimated load reductions were regarded as unattainable by some stakeholders.
- Some stakeholders thought the estimates of avian and other wildlife population and on-site sewage facilities were not credible.
- The stakeholders requested additional modeling scenarios using more recent cattle stocking rates.
- The stakeholders requested that BMPs being considered for use and their effectiveness be included in additional model simulations.

The TCEQ and the TSSWCB are assessing the latest data and stakeholder concerns to determine the next appropriate steps.

Public Participation

In all its projects, the TCEQ seeks to gather opinion and information from people who represent government, permitted facilities, agriculture, business, environmental, and community and private interests in the watershed. The TCEQ solicits advice and comment from the public about this project at meetings and through print and media notices.

For More Information

Contact one of the people listed below, or visit the project websites at:

<www.tceq.texas.gov/waterquality/tmdl/42-copano.html>

Or:

<www.tsswcb.state.tx.us/watersheds>

TCEQ Contact:

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TMDL Development Status

Start Date: September 2003

Projected End Date:

TCEQ Adoption:

EPA Region 6 Approval:

TMDL: Percent Complete

	10	20	30	40	50	60	70	80	90	100
Data Collection	█	█	█	█	█	█	█	█	█	█
Analysis	█	█	█	█	█	█	█	█		
TMDL Development	█	█								
Stakeholder Review										
TCEQ Adoption										

Project Highlights

- The TMDL project was expanded from considering just Copano Bay to include the tidal segments of the Mission and Aransas rivers.
- New data was collected from the rivers, above the bay and at wastewater treatment facilities.
- CRWR completed a tidal prism model, which employs a schematic processor to simulate loadings to the rivers and bay. The updated model used additional data collected between 2006 and 2010.
- The TCEQ and the TSSWCB are assessing the latest data and stakeholder concerns to determine the next appropriate steps.

Visit our website at: <www.tceq.texas.gov/goto/tmdl/>