Improving Water Quality in the Nueces Bay Watershed

One TMDL for Zinc in Oyster Tissue

Water Quality in Nueces Bay

The state of Texas requires that Nueces Bay (Segment 2482) be suitable for swimming, wading, fishing, and a healthy aquatic environment. However, oyster tissue testing has found high levels of zinc in Nueces Bay oysters, resulting in a closure on harvesting oysters throughout the entire bay.

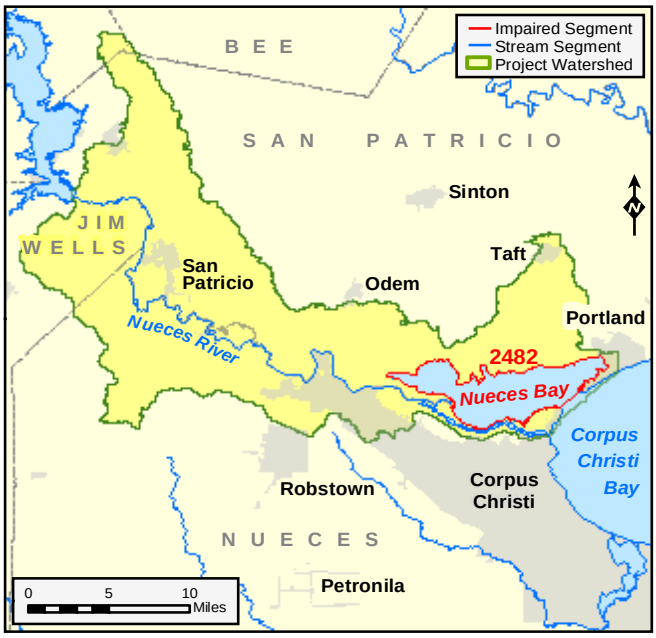
In response to these conditions, the TCEQ initiated a total maximum daily load (TMDL) project to determine the measures necessary to restore water quality in the bay. The goal of a TMDL is to determine the amount (or load) of a pollutant that a body of water can receive and still support its designated uses. This allowable load is then allocated among all the potential sources of pollution within the watershed, and measures to reduce pollutant loads are developed as necessary.

Zinc is an essential trace element naturally present in living tissue and essential to the healthy function of the body. Zinc plays an important role in metabolism, tissue repair, cell replication, and growth. However, zinc, like all trace elements, is toxic if consumed excessively over an extended period of time. Excessive intake of zinc may result in the reduced absorption and utilization of copper and iron by the body.

Learn more about water quality standards and monitoring by reading *Clean Water for Texas: Working Together for Water Quality*, available on the Web at <www.tceq.org/goto/tmdl/>.

Description of the Nueces Bay Watershed

Nueces Bay has an area of 28.9 square miles and drains the Nueces River Basin (16,950 square miles), along with portions of the San Antonio-Nueces and Nueces-Rio Grande Coastal Basins. Nueces Bay is a shallow, secondary bay that receives freshwater from the Nueces River and exchanges saline water with Corpus Christi Bay. The headwaters of the Nueces River originate in the central Texas hill country and flow approximately 315 miles to Nueces Bay near Corpus Christi. Principal tributaries of the Nueces River include the Atascosa and Frio Rivers. The western part of the Edwards Aquifer lies within the basin, along with two major reservoirs—Choke Canyon Reservoir and Lake Corpus Christi. The western part of Corpus Christi is the only major metropolitan area within the boundary of the watershed. Other large communities



within the basin include Uvalde, Pleasanton, George West, and Three Rivers. The watershed is geographically transitional, lying between the chaparral brush country to the south and the coastal-plain grassland prairies to the north. The climate in this region is arid most of the time, except when influenced by freshets and tropical storms which often result in flooding.

Nueces Bay is of economic and ecologic importance to the surrounding region. Economic activities in and around the bay include petrochemical refining and production, agriculture, manufacturing, recreation, maritime commerce, and tourism. Ecologically, Nueces Bay provides a home for many plants and animals, and plays a role in water purification, and storm protection.

Project Development

A review of the historical data revealed a limited data set and excessively high levels of zinc in oyster tissue. Targeted tissue monitoring began in February 2002. Oyster, fish and crab tissue were sampled by the Texas Department of State Health Services (DSHS). A risk assessment by DSHS in January 2003 confirmed the high levels of zinc in oyster tissue. The data sets of the TCEQ and the Coastal Bend Bays and Estuaries Program (CBBEP) for zinc in water and sediment were compiled, and the drainage areas were spatially

delineated. The Center for Research in Water Resources (CRWR) updated a total loadings model for the bay in June 2003. The TCEQ responded to the public comments and revised the draft to reflect current conditions in Corpus Christi Bay and the Corpus Christi Inner Harbor using recently collected data.

The TMDL was adopted by the TCEQ on November 1, 2006. EPA approved the TMDL on December 15, 2006.The revised TMDL now indicates an excess capacity. The Implementation Plan was adopted by the TCEQ on October 24, 2007. The Implementation Plan recommends continued sampling to track attenuating zinc levels in Nueces Bay.

Public Participation

Public participation is an important component of all TMDL projects. The CBBEP stakeholder committees are the forum for local public participation in the Nueces Bay project. These committees are made up of representatives from:

- state and federal agencies
- industries
- citizen groups
- local governments
- universities
- water districts
- agricultural interests
- environmental groups
- other water user groups

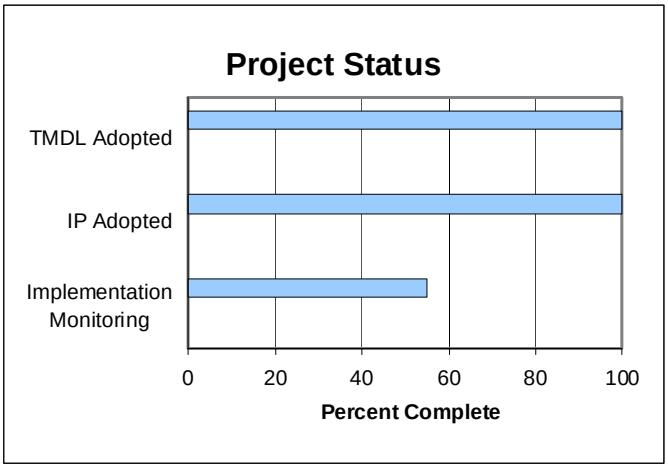
The first stakeholder meeting was hosted by the CBBEP on September 27, 2002, in Corpus Christi. The second stakeholder meeting was held on October 22, 2003. Stakeholders and project staff discussed the results of the loadings model and the allocation of the allowable load to the sources in the watershed. Presentations have also been made at the regularly scheduled meetings of the Port Industries of Corpus Christi.
A public stakeholder meeting was held on July 27, 2006, to solicit comment on the draft TMDL. Comments were received and incorporated into the TMDL.

TMDL Development Status

Start Date: December 2000
Projected End Date: August 2006
TCEQ Adoption: November 1, 2006
Submitted to EPA Region 6: November 8, 2006
EPA Region 6 Approval: December 15, 2006

Implementation Plan Status

Start Date: December 2006
TCEQ Approval: October 24, 2007



For More Information

To find out more about upcoming meetings and progress of the project, contact:

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Project Highlights

- Summer 2007 flooding reduced oyster populations throughout the bay which resulted in a lack of adequate size oysters for 2008 sampling.
- Implementation monitoring is ongoing.

Visit our Web site at: <www.tceq.org/goto/tmdl/>