



Improving Water Quality in Patrick Bayou Assessing the Aquatic Life Use

Patrick Bayou was identified on the Texas list of impaired waters prior to 1999. The reasons for listing the bayou included:

- Average dissolved copper concentrations above levels established to protect aquatic life.
- Water and sediment toxicity levels above levels established to protect aquatic life.
- Water temperatures above levels established to safeguard general water quality uses.

Additional data further supported the existence of water quality concerns in Patrick Bayou. These included evidence of a degraded benthic macroinvertebrate community and levels of metals and organics that exceeded screening levels.

In response to these conditions, TCEQ initiated a total maximum daily load (TMDL) project. A TMDL is like a budget—it determines the amount (or load) of a particular pollutant a body of water can receive and still support its designated uses. The allowable load is then allocated among categories of sources within the watershed, and measures to reduce pollutant loads are developed as necessary.

Specific objectives of the Patrick Bayou project included:

- Determining whether water quality conditions had changed after additional limits were added to wastewater discharges.
- Identifying specific pollutants causing toxicity.
- Determining the appropriate strategy for addressing the impairments to water quality.

Learn more about water quality standards, monitoring, and TMDLs by reading [Preserving and Improving Water Quality](#)¹, available on our website and in print.

The Patrick Bayou Watershed

Patrick Bayou is a small tributary of the Houston Ship Channel. The bayou flows in a northerly direction and discharges into the south side of the Houston Ship Channel approximately 3.7 km upstream of its confluence with the San Jacinto River. A portion of Patrick Bayou lies south of SH 225, is largely concrete lined, and serves as drainage for the City of Deer Park. Immediately downstream of SH 225, the first 1.3 km of



the bayou flows through either concrete culverts or a gunite-lined channel. The bayou downstream of this point has earthen banks and a soft mud bottom.

A majority of the bayou north of SH 225 is tidally influenced to some degree. The bayou is affected by industrial and municipal wastewater discharges and by storm water runoff from industrial and urban areas. The watershed includes portions Harris County and the city of Deer Park.

Public Participation

In all its projects, TCEQ seeks to gather opinions and information from people who represent government, permitted facilities, agriculture, business, environmental, community, and private interests in the watershed.

The Patrick Bayou Lead Organization (PBLO), a consortium of permittees that discharged to Patrick Bayou, funded scientific studies to develop recommendations for this project. The member represented the City of Deer Park, Lubrizol, Oxy Vinyls, Praxair, Rohm and Haas Texas, and Shell Inc.

¹ <https://www.tceq.texas.gov/publications/gi/gi-351>

Local stakeholders also participated in the project. Public participation was coordinated through the Patrick Bayou TMDL Public Participation Panel. The panel included representatives of the PBLO, community members serving either as individuals or as representatives of groups, and the TCEQ project manager. Informal observers participated as well.

Meetings were arranged, conducted, and documented by a professional facilitator. Reports and recommendations were developed in conjunction with the Public Participation Panel and were submitted to the stakeholders and the PBLO in 2002.

Parsons, Inc. performed technical work for the project, including work plan development, water and sediment sampling, data analyses, modeling, and report compilation.

Status and Implementation

Analyses of data collected through April 2001 indicated that water toxicity and dissolved copper no longer exceeded water quality standards due to new limits implemented by dischargers. Those controls will continue, so no TMDL allocations were prepared.

In September 2002, Patrick Bayou was added to the Superfund National Priority List. Progress in remediating sediment toxicity at the [Patrick Bayou Superfund site](#)² is available on the EPA's website.

The major source of heated-water discharge has closed since the study, and bayou temperatures have exceeded the temperature criterion since then.

For More Information

Visit the project webpage at:

www.tceq.texas.gov/waterquality/tmdl/18-patrick-bayou.html

Send us an e-mail at tmdl@tceq.texas.gov or call us at 512-239-6682.

Project Highlights

- Analyses of data collected through April 2001 indicated that water toxicity and dissolved copper no longer exceeded water quality standards due to control actions previously implemented by dischargers. Those controls will continue, so no TMDL allocations were developed.
- The major source of heated-water discharge has closed since the study, and bayou temperatures have not exceeded the temperature criterion since then.
- The last meeting of the Public Participation Panel was held on August 29, 2002.
- Also in 2002, the PBLO prepared formal documentation of their data and analyses, with recommendations concerning water temperature and sediment toxicity.
- In September 2002, Patrick Bayou was added to the Superfund National Priority List based on sediment testing performed independently of this TMDL project. Progress in remediating sediment toxicity at the Patrick Bayou Superfund site is available on EPA's website (see link under "For More Information").

² <https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0605329#CleanupProgress>