



Improving Water Quality in the Arroyo Colorado A Watershed Protection Plan for Dissolved Oxygen

The state of Texas requires that water quality in the Arroyo Colorado be suitable for swimming, fishing, and a healthy aquatic ecosystem. However, dissolved oxygen levels are sometimes too low downstream of the Port of Harlingen (Segment 2201) to provide optimum conditions for fish and other aquatic life.

Oxygen gas, which dissolves in water, is essential for the survival of aquatic life. While the amount of dissolved oxygen in water fluctuates naturally, various human activities can cause unusually or chronically low dissolved oxygen levels which may harm fish and other aquatic organisms.

In response to these conditions, the TCEQ's Total Maximum Daily Load (TMDL) program facilitated local efforts to develop a watershed protection plan (WPP) to improve water quality conditions in the Arroyo Colorado. Working with the TCEQ and other agencies, the Arroyo Colorado Watershed Partnership, a group of local stakeholders and interested parties, developed *A Watershed Protection Plan for the Arroyo Colorado—Phase I*.

The Phase I Arroyo WPP describes the measures proposed for implementation from 2007 through 2017 to improve water quality and habitat in the Arroyo Colorado. The stakeholders published an update to the WPP in August 2017.

Learn more about water quality standards, monitoring, and TMDLs by reading *Preserving and Improving Water Quality*, available on our website at www.tceq.texas.gov/goto/tmdl/.

The Arroyo Colorado Watershed

The Arroyo Colorado, an ancient distributary channel of the Rio Grande, extends about 90 miles from Mission, Texas to the Laguna Madre in the Lower Rio Grande Valley. Flow in the Arroyo Colorado is sustained by wastewater discharges, agricultural irrigation return flows, urban runoff, and base flows from shallow groundwater. Although an integral part of a major floodway system, water is rarely directly diverted from the Rio Grande into the Arroyo Colorado (direct diversions occur only during major flood events). The Arroyo Colorado is also the major source of fresh water to the lower Laguna Madre, an economically and ecologically important resource to the region.

The Arroyo Colorado watershed (1,828 square kilometers) is a flat coastal plain that slopes gently toward the



Gulf of Mexico. The fertile farmland, long growing season, and access to water from the Rio Grande for irrigation make this region one of the most productive agricultural areas in the U.S. The Laguna Atascosa National Wildlife Refuge and several county and city parks are located within the Arroyo Colorado watershed. The mild climate, semi-tropical plants and animals, and many recreational opportunities draw large numbers of people to the Arroyo Colorado watershed. One third of the stream also is used for shipping from the Gulf Intracoastal Waterway to the Port of Harlingen.

Public Participation

The Arroyo Colorado Watershed Partnership Steering Committee oversees implementation of the Arroyo Colorado WPP. The steering committee has representatives from permitted wastewater dischargers, agriculture groups, universities, citizen groups, and local, state, regional, and federal government agencies.

Project Development

The Arroyo Colorado Watershed Partnership (ACWP), in cooperation with the TCEQ, established several work groups to address the seven major components of the watershed plan. These workgroups submitted their recommendations to the Partnership's steering committee in 2006.

The recommendations were incorporated into the final WPP document, which was published in January 2007. A copy of the Arroyo WPP is available on the Web at <arroyocolorado.org>.

The TCEQ Nonpoint Source Program and EPA have provided financing for various pollution mitigation projects described in the plan, including construction of several wetland systems and facilitation of education and outreach programs. Information about implementation projects being funded through the TCEQ NPS Program is available on our website at <www.tceq.texas.gov/waterquality/nonpoint-source/projects/>.

For More Information

For information about the project, please visit the following websites.

<www.tceq.texas.gov/waterquality/tmdl/13-arroyo.html>

or

<arroyocolorado.org>

Or contact one of the listed organizations.

Arroyo Colorado Watershed Partnership:

Texas Water Resources Institute
956-969-5607

TCEQ Central Office:

Nonpoint Source Program
512-239-6682, nps@tceq.texas.gov

TMDL Program
512-239-6682, tmdl@tceq.texas.gov

TSSWCB Central Office:

254- 773-2250

WPP Development

Start Date: May 2004

End Date: December 2006

WPP Development Highlights

- Results of a TMDL analysis developed in 2002 indicated that the dissolved oxygen deficit in the tidal segment is related as much to the physical setting and geomorphology of the Arroyo Colorado as it is to the loading of nutrients and oxygen-demanding substances from the watershed.
- In May 2004, the TCEQ initiated a project to develop a WPP to address dissolved oxygen and bacteria impairments in the Arroyo.
- In May 2004, the TCEQ established contracts with Texas A&M Sea Grant and Texas Parks and Wildlife Department to provide an independent watershed coordinator and a habitat restoration specialist to assist the Arroyo Colorado Watershed Partnership to develop the WPP.
- In July 2005, the Arroyo Colorado Watershed Partnership (ACWP) was formed. Work groups were established to address key elements of the WPP. The work groups submitted recommendations to the Arroyo Colorado Partnership Steering Committee in May 2006.
- In January 2007, the ACWP published *A Watershed Protection Plan for the Arroyo Colorado – Phase I*.
- The Partnership began revising the WPP in 2012 and published the *Update to the Arroyo Colorado Watershed Protection Plan* in August 2017.
- The TCEQ Nonpoint Source Program and EPA continue to provide support for various pollution mitigation projects described in the WPP.