



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

Water Quality in the Arroyo Colorado

The state of Texas requires that water quality in the Arroyo Colorado be suitable for swimming, fishing, and a healthy aquatic ecosystem. However, water quality analyses have found that 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 Arroyo Watershed Protection Plan document (WPP) describes the measures proposed for implementation between 2007 and 2015 to improve water quality and natural habitat in the Arroyo Colorado. Additional information about the Arroyo Colorado WPP can be found at: www.tceq.state.tx.us/implementation/water/tmdl/13-arroyo.html and www.arroyocolorado.org.

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

Description of 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 Process

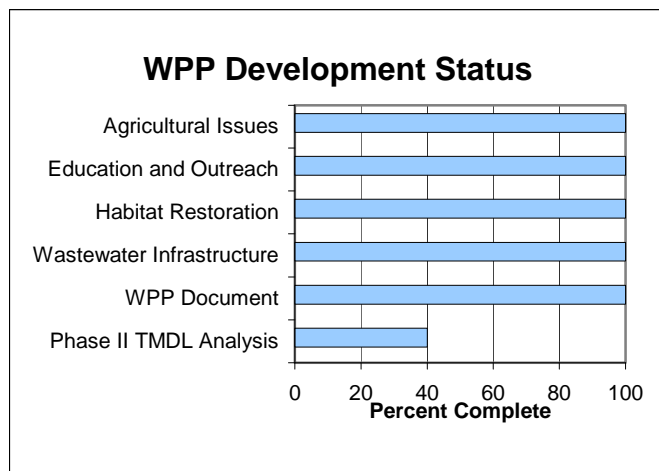
The Arroyo Colorado Watershed Partnership Steering Committee oversees implementation of the Arroyo Colorado WPP. The steering committee for the partnership is composed of representatives from permitted wastewater dischargers, agriculture groups, universities, citizen groups, and local, state, regional,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

Project Development

The Arroyo Colorado Watershed Partnership, in cooperation with the TCEQ, established several work groups to address the seven major components of the watershed plan:

- Wastewater infrastructure
- Agricultural issues
- Habitat restoration
- Land use
- Refinement of the TMDL analysis
- Monitoring
- Public education

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. Three years into the implementation of the plan, the TCEQ and USEPA 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. A copy of the Arroyo WPP is available on the web at <www.arroyocolorado.org>.



In a related effort, the TCEQ is currently developing a Phase II TMDL analysis of the Arroyo Colorado. For information on the progress of the Phase II TMDL, visit <www.tceq.state.tx.us/implementation/water/tmdl/13-arroyo.html>.

For More Information

For information on upcoming meetings and documents available for review, visit the following Web sites:

<www.tceq.org/goto/tmdl/>
<www.arroyocolorado.org>

or contact one of the following representatives from the Texas Commission on Environmental Quality (TCEQ), the Texas State Soil and Water Conservation Board (TSSWCB), or Texas Water Resources Institute.

Arroyo Colorado Watershed Coordinator:

Jaime Flores
Texas Water Resources Institute
(956) 969-5607, jjflores@ag.tamu.edu

TCEQ Central Office:

Arthur Talley, Nonpoint Source Program,
(512) 239-4026, wcarter@tceq.state.tx.us

Roger Miranda, TMDL Program,
(512) 239-6278, rmiranda@tceq.state.tx.us

TSSWCB Central Office:

Aaron Wendt, (254) 773-2250, ext. 232
awendt@tsswcb.state.tx.us

TSSWCB Regional Coordinator:

Andy Garza, TSSWCB - Harlingen, (956) 421-5841
agarza@tsswcb.state.tx.us

WPP Development Status

Start Date: May 2004

Projected End Date: December 2006

Watershed Protection Plan Highlights

- Results of a TMDL analysis developed in 2002 (Phase I TMDL) 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.
- A project to develop a Watershed Protection Plan (WPP) was initiated in May 2004 to address dissolved oxygen and bacteria impairments in the Arroyo.
- In May 2004, the TCEQ established contracts with Texas A&M's Sea Grant program and Texas Parks and Wildlife Department to provide an independent watershed coordinator and a habitat restoration specialist to assist a local stakeholder group (i.e. the Arroyo Colorado Watershed Partnership) to develop the WPP.
- In July 2005, the Arroyo Colorado Watershed Partnership (ACWP) was formed and 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".
- In a related effort, Phase II of the Arroyo Colorado TMDL will refine the draft Phase I TMDL developed in 2002 and develop a final Phase II TMDL for dissolved oxygen in the Arroyo Colorado by 2014.

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