



Improving Water Quality in Martin Creek Reservoir

Assessing the Fish Consumption Use

Water Quality in Martin Creek Reservoir

The state of Texas requires that water quality in Martin Creek Reservoir (Segment 0505F) be suitable for swimming, wading, fishing, and a healthy aquatic environment. However, elevated concentrations of selenium were found in the tissue of fish collected from the reservoir. As a result, the Texas Department of State Health Services (DSHS) issued an advisory in May of 1992, restricting the consumption of fish from the reservoir.

In response to this condition, the Total Maximum Daily Load (TMDL) Program initiated a project to determine whether the consumption of fish from the reservoir still posed a threat to human health. The TCEQ worked with the DSHS to collect fish samples, conduct laboratory analyses, and prepare a characterization of the risks to consumers from all contaminants found in fish tissue samples.

Selenium is a naturally occurring element that is widely but unevenly distributed in the earth's crust. It is also an essential dietary element that prevents damage to tissues by oxygen. However, when consumed in amounts higher than the recommended daily allowance (RDA), selenium is toxic to humans and animals. The DSHS advisory included all species of fish found in Martin Creek Reservoir and provided specific recommendations for limiting fish consumption.

Selenium in Martin Creek Reservoir first became a concern in the late 1970s when elevated levels of selenium in fish tissue were thought to be the cause of a series of fish kills. The steam-electric power plant located adjacent to the reservoir is a potential source. The facility generates electricity by combustion of lignite coal. This combustion releases selenium and other trace elements which then become part of the waste stream. Another potential source of selenium is from lignite surface mining areas located in the watershed.

Fish Are Now Safe to Eat

After assessing all the data collected and characterizing the risks associated with all the contaminants found in fish tissue, the DSHS concluded that consumption of fish from Martin Creek Reservoir does not pose a threat to human health. The fish consumption advisory was rescinded on October 14, 2004. The impairment "selenium in fish tissue" was



proposed for delisting on the draft 2004 303(d) List (part of the Draft 2004 Texas Water Quality Inventory and 303(d) List). The delisting will be complete if the U.S. Environmental Protection Agency approves it when they review the state's draft list. The schedule of special monitoring and analysis of Martin Creek Reservoir fish is concluded.

Martin Creek Reservoir Watershed

Martin Creek Reservoir is an impoundment of Martin Creek, located five miles southwest of Tatum (pop. 1,310). It was constructed in 1974 to serve as a cooling reservoir for a steam-electric power plant. The western shore of the reservoir forms a portion of the county line between Rusk and Panola Counties.

The primarily rural watershed is in the Sabine River basin, and drains an area of 130 square acres in northeast Rusk and northwest Panola Counties. Vegetation consists of mixed pine and hardwood forests. Lumber, farm, and dairy enterprises are the main sources of income for residents. Recreation is also important to the local economy, with boating and fishing attracting large numbers of people to the watershed each year.

Public Participation

The TCEQ communicated the progress of this project through the Sabine River Basin Steering Committee created by the Texas Clean Rivers Program. The project was a collaborative effort involving the TCEQ, the DSHS, the Texas Parks and Wildlife Department (TPWD), and the Sabine River Authority (SRA).

For More Information

For more information about the project, contact one of the TCEQ staff listed on this page.

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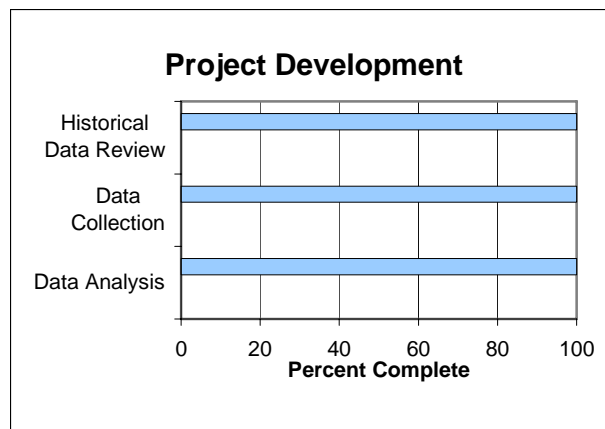
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To learn more about how surface water is measured and monitored, read *Clean Water for Texas: Working Together for Water Quality*. For general information about how TMDL projects are structured, read *The TMDL Process in Texas: What You Need to Know*. Both documents are available on the Web at www.tceq.org/goto/tmdl/.

Project Development Status

Start Date: May 2001

End Date: October 2003



Project Highlights

- TCEQ staff compiled data related to selenium concentrations in fish tissue and historical discharge records.
- At a meeting held September 2001 with representatives from the DSHS, the TPWD, and the TCEQ, staff decided that the human health risks associated with consumption of fish from Martin Creek Reservoir should be reassessed.
- The TCEQ and the DSHS are working together to conduct the risk assessment. Work will consist of fish sampling; the analysis of fish specimens for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, and a suite of metals that includes arsenic (As), cadmium (Cd), copper (Cu), lead (Pb), selenium (Se), zinc (Zn), and mercury (Hg). Project staff will prepare conclusions and recommendations based on the analysis.
- The quality assurance project plan (QAPP) has been finalized by the TCEQ and the DSHS, and has been approved by the EPA.
- Thirty fish samples were collected from Martin Creek Reservoir in November 2002. Laboratory analyses of the fish tissue have been completed. The human health risk characterization is pending.
- The DSHS completed its risk characterization and concluded that consumption of fish from Martin Creek Reservoir does not pose a threat to human health. The fish consumption advisory was rescinded on October 14, 2004.
- The "selenium in fish tissue" impairment was proposed for delisting on the draft 2004 303(d) List (part of the Draft 2004 Texas Water Quality Inventory and 303(d) List). The delisting will be complete when the draft 2004 List is approved by the U.S. Environmental Protection Agency.