Texas Commission on Environmental Quality
Total Maximum Daily Load Program
GI-483

Improving Water Quality in Welsh Reservoir

Assessing the Safety of Fish Consumption

In 1992, the Texas Department of State Health Services (DSHS) issued an advisory in May, restricting the consumption of fish from Welsh Reservoir (Segment 0404D). Elevated concentrations of selenium in the tissue of fish collected from the reservoir posed a possible health risk for consumers. DSHS advisory included all species of fish found in Welsh Reservoir and provided specific recommendations for limiting fish consumption.

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. TCEQ worked with 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.

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

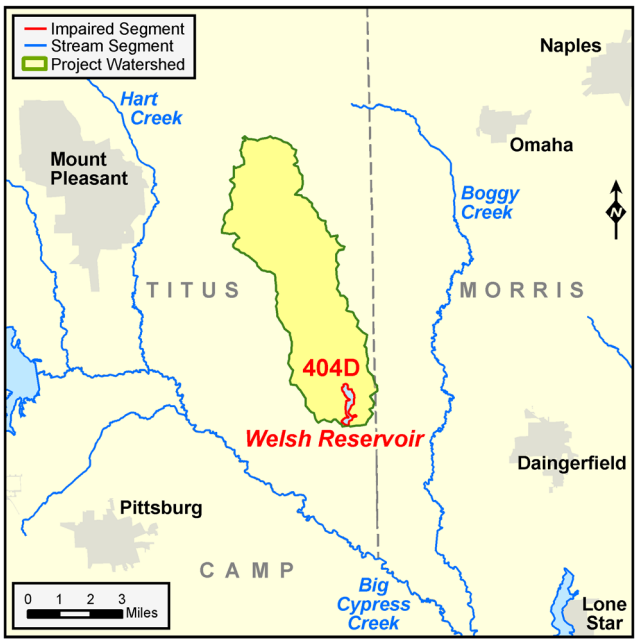
Fish Are Now Safe to Eat

After assessing all the data collected and characterizing the risks associated with all the contaminants in fish tissue, DSHS concluded that consumption of fish from Welsh 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 The fish consumption advisory was rescinded on October 14, 2004.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 removed from the state's 303(d) list of impaired waters in 2004. The schedule of special monitoring and analysis of the reservoir fish is concluded.

Welsh Reservoir Watershed

Welsh Reservoir is in the Cypress Creek Basin and impounds Swauano and Justiss Creeks. It is located eleven miles southeast of Mount Pleasant in Titus County.



The reservoir's watershed is wholly contained within Titus County. The watershed is rural, and is characterized by gently rolling wooded hills and broad, frequently flooded, densely vegetated stream bottoms. Post oak savannah is prominent in the western portion of the basin, while pineywoods are prevalent in the eastern portion.

The 1,465-acre reservoir was constructed in 1976 to serve as a cooling pond for a steam-electric power plant. Welsh Reservoir is a popular recreational area for boating and scuba diving. Fishing for sunfish, trophy bass, catfish, and crappie also lures large numbers of recreationists to the reservoir each year.

Public Participation

TCEQ communicated the progress of this project through the Steering Committee of the Cypress Creek Basin Clean Rivers Program. The project was a collaborative effort involving TCEQ, DSHS, the Texas Parks and Wildlife Department (TPWD), and the North East Texas Municipal Water District.

[1] https://www.tceq.texas.gov/publications/gi/gi-351

For More Information

Email us at tmdl@tceq.texas.gov or call us at 512-239-6682.

Visit the project webpage at:

www.tceq.texas.gov/waterquality/tmdl/14-welshreservoir.html.

Project Dates

Start Date: January 2002
End Date: October 2003

Project Highlights

- At a meeting held September 2001, with representatives from DSHS, TPWD, and TCEQ, staff decided that the human health risks associated with fish consumption from Welsh Reservoir should be reassessed.
- TCEQ contracted with DSHS in January 2002 to conduct a human health risk assessment. Work consisted of fish sampling and the subsequent analysis of fish specimens for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, and a metals panel including arsenic (As), cadmium (Cd), copper (Cu), lead (Pb), selenium (Se), zinc (Zn), and mercury (Hg). Project staff prepared conclusions and recommendations based on the analysis.
- Fifteen fish samples were collected from Welsh Reservoir in March 2003.
- DSHS completed their risk characterization and concluded that consumption of fish from Welsh Reservoir does not pose a threat to human health. The fish consumption advisory was rescinded on October 14, 2004. The impairment for selenium in fish tissue for the reservoir was removed from the state's list of impaired waters in 2004.