



North Central Texas Water Quality Project

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Background

Water quality in North Central Texas reservoirs is a growing concern

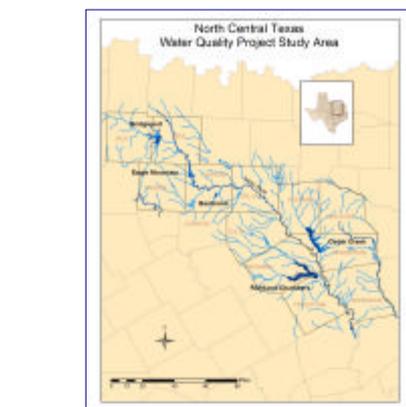
Five of the major reservoirs in the Trinity River basin managed by Tarrant Regional Water District (TRWD) now serves **1.6 million** people across 11 counties (Ft. Worth and surrounding cities) and are expected to serve **2.66 million** by 2050

Need to develop comprehensive watershed management plans for each of the five reservoirs (Cedar Creek, Eagle Mountain, Richland Chambers, Bridgeport and Benbrook)

Objectives

- Assemble information on sediment and nutrient loads for specific TRWD managed reservoirs and associated streams.
- Use computer modeling to analyze the biological, physical, and economic feasibility of alternative management practices and facilities.
- Identify the parameters that are discharged from point source (i.e. municipal and industrial wastewater treatment plants) that may affect water quality in TRWD reservoirs
- Conduct public meetings and provide educational programs about water quality protection and stakeholders and customers

Study Area



Cedar Creek Reservoir Data

The lakewide median chlorophyll was 17.1 µg / liter, and a parametric trend model estimated a lakewide rate of increase of 8.4% APR ($R^2 = 0.465, P < 0.0001$).

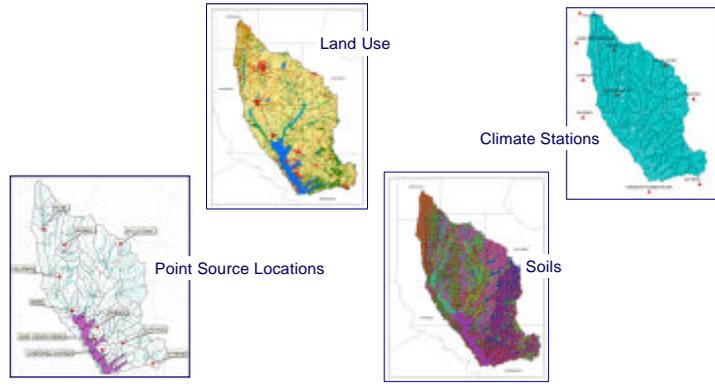
The lakewide median total phosphorus was 0.09 mg P / liter, and a parametric trend model estimated a lakewide rate of increase of 3.6% APR ($R^2 = 0.557, P < 0.0001$).

Model Development

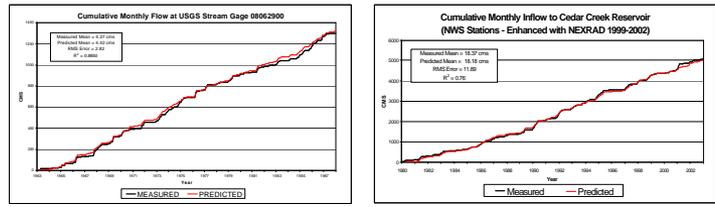
- A suite of three EPA-supported computer models is being used:
- SWAT** to model watersheds for both point source and nonpoint source nutrient and sediment loads,
 - QUAL2E** to route and attenuate the SWAT-generated loadings of the water supply reservoir, and
 - WASP** to take these loadings and forecast the impact to the reservoirs.

SWAT Modeling

Basic watershed information has been gathered and incorporated into SWAT for Cedar Creek.



Calibration and Validation are Completed on SWAT



Application of Complete Integrated Model

Once the models (SWAT, QUAL2E, and WASP) are integrated, nutrient/sediment reduction scenarios will be run with varying nonpoint source and/or point source loadings.

This approach will consider best management practices for nonpoint sources control and best available technologies for point source control.

Economic Analysis

Conduct financial and budget analyses to estimate costs and returns for alternative management practices simulated with SWAT, QUAL2E, and WASP.

Education/Outreach

Developed two publications on Watershed Management and Stormwater Management and 12 educational fact sheets on urban and agricultural water quality issues.



Conducted trainings on watershed management, nonpoint source pollution and BMP options for federal and state resource personnel, county and city officials, county Extension agents, soil and water conservation districts and environmental consulting firms.

Constructed a demonstration stream trailer and educated over 3,500 youth and 900 adults in the Cedar Creek Watershed.



Delivered soil testing campaign for producers and homeowners in Cedar Creek Watershed.

Upcoming Activities

- Develop local stakeholder groups.
- Develop additional publications for nonpoint source pollution sources.
- Enhance public education and participation in developing watershed management plan.

Funding Agencies

United States Environmental Protection Agency
United States Department of Agriculture – NRCS

For More Information

Project Web site -- <http://nctx-water.tamu.edu>