North Texas
Municipal Water District
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Regional Service Through Unity… Meeting Our Region's Needs Today and Tomorrow

The Lavon Lake Watershed

Lavon Lake is the uppermost reservoir on the East Fork of the Trinity River and provides drinking water to over 1.6 million residents in North Texas. The 491,520-acre watershed which drains to Lavon Lake includes parts of Collin, Grayson, Fannin, and Hunt Counties (Fig. 1). While undeveloped or agricultural land encompasses most of the watershed, North Texas is one of the fastest growing regions in the nation. In total, there are 29 incorporated communities in the Lavon Lake watershed (Fig. 2). Most of the urban development found in the watershed is concentrated around Wilson Creek and lowermost portion of the East Fork of the Trinity River. However, projected population growth is expected to result in further expansion of urbanized areas in the Lavon Lake watershed.

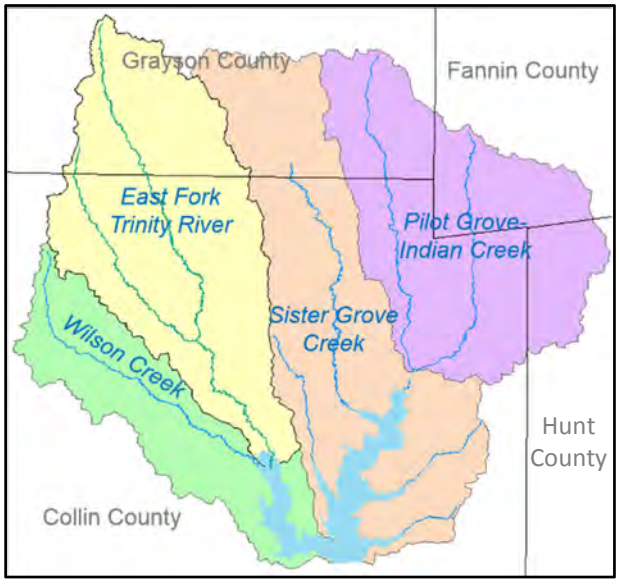

Figure 1. The Lavon Lake Watershed.

The need for a Watershed Protection Plan

Wilson Creek and the East Fork of the Trinity River above Lake Lavon were identified on the state's most recent list of impaired waters (2014) due to elevated levels of bacteria. This list, known as the Texas Integrated Report's 303(d) list, is compiled every two years using the most recent 7 years of water quality sampling data collected through the Texas Commission on Environmental Quality (TCEQ) Clean Rivers Program.

Data used for the 2014 Integrated Report were taken during the 7-year period between December 2005 and November 2012. The geometric mean of these data for *E. coli* bacteria was 164 colony forming units per 100 milliliters (cfu/100 mL) for Wilson Creek and 151 cfu/100 mL for the Lower East Fork of the Trinity River above Lavon Lake, which exceeds the state standard of 126 cfu/100 mL.

Under the Clean Water Act, states must not only assess water quality but take action to restore and maintain the chemical, physical, and biological characteristics of our nation's waters. The two major avenues by which Texas addresses water quality impairments are Total Maximum Daily Load calculations (TMDLs) and Watershed Protection Plans (WPPs).

Allen, Anna, Blue Ridge, Celina, Dorchester, Fairview, Farmersville, Frisco, Gunter, Howe, Lavon, Leonard, Lowry Crossing, Lucas, McKinney, Melissa, Nevada, New Hope, Princeton, Prosper, Sherman, St. Paul, Tom Bean, Trenton, Van Alstyne, Westminster, Weston, Whitewright, and Wylie.

Figure 2. Communities in the watershed.

TMDLs calculate the maximum amount of pollutant a waterbody can receive and still meet water quality standards, and allocate that load among the various sources present in a watershed. A TMDL focuses on a single pollutant and can have regulatory implications for permitted dischargers in the watershed. Through this process each point-source discharger is allocated a pollutant load (total amount allowed over a given time). The second component of a TMDL is the Implementation-Plan, which identifies the corrective action(s) and/or management measures which must occur to restore water quality.

A WPP is a locally led, voluntary approach to addressing water quality that can serve as an alternative to TMDLs. WPPs are comprehensive plans that address not only the pollutant causing the impairment, but all potential pollutants in a watershed. Recommendations contained in a WPP are voluntary and are developed through a partnership with stakeholders who live and work in the watershed.

Lavon Lake was selected for WPP development due to its identification on the 2014 303(d) list as impaired for *E. coli* bacteria and because of growing concerns about nutrient concentrations. Furthermore, due to the predominantly rural makeup of the Lavon Lake watershed, a voluntary watershed protection plan approach has the potential to most effectively address these water quality issues. Upon completion of this project, stakeholders will have a guide outlining actions and management measures that when implemented have the best chance of restoring and protecting water quality in Lavon Lake and its tributaries. Additionally, upon EPA acceptance the WPP becomes eligible for federal funding through the state's 319(h) nonpoint source grant program, and has a greater potential to obtain funding from other outside sources.

Developing a Watershed Protection Plan for Lake Lavon

The Texas State Soil and Water Conservation Board (TSSWCB) is responsible for administering Texas' soil and water conservation law and works closely with the TCEQ to fulfill our state's water quality management responsibilities under federal law. As part of that responsibility, TSSWCB provides financial and technical assistance for developing watershed protection plans. To that end, the TSSWCB has partnered with the North Texas Municipal Water District and Texas A&M AgriLife Extension Service to develop a Watershed Protection Plan for Lavon Lake.

This project will coordinate development of a voluntary, stakeholder-driven watershed protection plan for Lake Lavon through two major phases.

Phase 1

The initial phase of this project will provide critical supporting data and information necessary for development of a stakeholder-driven watershed protection plan for Lavon Lake. Collecting this information preemptively will allow the data to be analyzed and prepared for delivery to the public in an organized and efficient manner. Data collected will primarily include land use and land cover, and in-stream water quality monitoring. Combined with existing data sources, this information will provide better understanding of how the watershed behaves under different conditions. Characterizing the watershed in this way is crucial to development of an effective management strategy.

Phase 2

The final phase will facilitate the stakeholder-driven plan development process. Through a series of public meetings, stakeholders will be presented with data and information collected during Phase 1. Feedback from the general public will be used to refine and finalize essential data components and to prepare the final WPP, with special emphasis on a plan for implementation. By maximizing and sustaining stakeholder involvement throughout this process a comprehensive WPP that addresses all potential sources of pollution will be developed.

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