



Improving Water Quality in Gilleland Creek A TMDL Project for Bacteria

The TCEQ establishes the standards to maintain the quality of the state's surface waters consistent with public health and enjoyment, protection of wildlife, operation of industries, and economic development.

In Gilleland Creek (Segment 1428C), bacteria concentrations are sometimes elevated, indicating a possible health risk for people who swim or waded in them—activities called “contact recreation” in the state's standards for water quality.

Bacteria are commonly found in the intestines of warm-blooded organisms such as humans, livestock, poultry, cats, and dogs. High concentrations of bacteria may indicate the presence of disease-causing microorganisms that can pose a health threat to people.

The TCEQ developed a total maximum daily load project to determine the measures necessary to restore water quality in the creek. The goal of a TMDL is to determine the amount (or load) of a pollutant that a body of water can receive and still support its designated uses. The allowable load is then allocated among categories of sources within the watershed. Stakeholders work with the state to develop measures that reduce pollutant loads and implement the TMDLs.

Learn more about water quality standards and monitoring, and TMDLs by reading *Preserving and Improving Water Quality*, available on our website at www.tceq.texas.gov/goto/tmdl/.

Project Watershed

The Gilleland Creek watershed is located in central Texas (Travis County) and covers about 76 square miles, running through the Blackland Prairie region. Land use in the watershed is undergoing transition from primarily agricultural to heavily urban. The results of urbanization are most evident during ambient flow, when the water in Gilleland Creek is mostly wastewater effluent from the six municipal wastewater treatment facilities and one industrial permitted discharger in the watershed.

TMDL Development

The TCEQ initiated the project in August 2004 through a contract with the Lower Colorado River Authority. Initial tasks in the project included review of existing water quality data for the segment and the development of a monitoring plan to collect data necessary to complete the TMDL. Data were collected



between August 2005 and spring 2006. The sampling results were modeled using load duration curve analysis. The creek was generally out of compliance with the contact recreation standard during medium- to high-flow events, which indicates that the cause is due to nonpoint source pollution. The TMDL for bacteria in Gilleland Creek was adopted by the TCEQ on August 8, 2007 and approved by the U.S. Environmental Protection Agency (EPA) on April 21, 2009. The second part of the TMDL process is an Implementation Plan (I-Plan) which describes the strategy and activities the TCEQ and watershed partners will carry out to improve water quality in the affected watershed. I-Plan development involved substantial stakeholder involvement.

Public Participation

The Gilleland Creek TMDL Stakeholder Group provided advice and comment on this project. Participants represented government, permitted facilities, agriculture, business, environmental, and community interests in the Gilleland Creek watershed.

Implementation Plan Development

During the fall of 2007, the stakeholders formed five work groups to develop the implementation plan:

- Natural Resource Management Work Group

- Ordinances and Planning Work Group
- On-Site Septic Systems Group
- Storm Water Work Group
- Education and Outreach Work Group
- Wastewater Work Group

The work groups spent considerable time developing draft management measures for the implementation plan. A total of 33 work group meetings were held during development of the draft plan.

Each work group was responsible for development of management measures in their areas of expertise. The I-Plan plan documents six management measures and one control action that will be used.

Management Measures (voluntary activities)

1. *Identify, prioritize, inspect, and bring into compliance malfunctioning OSSFs.*
2. *Restore and preserve riparian zones to protect water quality.*
3. *Determine the effectiveness of retrofitting existing storm water detention basins to also perform as water quality facilities to reduce bacteria concentrations.*

4. *Partners coordinate to develop a general campaign to raise public awareness of unregulated contributions of bacteria pollution, specifically pet waste.*
5. *Develop and adopt equivalent water quality ordinances between government jurisdictions.*
6. *Conduct annual visual inspection of wastewater collection systems within 100 feet (ft) from the centerline of Gilleland Creek and its tributaries.*

Control Action (regulatory activities)

7. *Monitor and report effluent E. coli concentrations from WWTFs.*

For More Information

Contact the project manager listed below. Or visit the TCEQ website at <www.tceq.org/goto/tmdl/>.

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TMDL Development

Start Date: August 2004

TCEQ Adoption: August 8, 2007

EPA Region 6 Approval: April 21, 2009

I-Plan Development Status

TCEQ Approval: February 9, 2011

Project Highlights

- Data analysis revealed that bacteria concentrations were elevated during rainfall events, and up to three to four days following. This trend strongly suggests that the sources of bacteria mainly come from nonpoint sources.
- The commission adopted the TMDL report on August 8, 2007.
- The EPA approved the TMDL on April 21, 2009.
- The commission approved the stakeholder-developed I-Plan on February 9, 2011.

Visit our website at: <www.tceq.texas.gov/goto/tmdl/>