



# Kickapoo Creek in Henderson County WPP

A guidance Document Developed by the Stakeholders of Kickapoo  
Creek Watershed to Address Water Quality in the Kickapoo Creek in  
Henderson County (Assessment Unity 0605A).

# Kickapoo Creek Watershed Protection Plan

A Guidance Document Developed by the Stakeholders of the Kickapoo Creek in Henderson County Watershed to Address the Water Quality in Kickapoo Creek in Henderson County (Assessment Unit 0605A)

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Cover photo: Kickapoo Creek at site 22164 in Henderson County, Texas

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## Acknowledgements

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Background information characterizing the watershed was developed as part of a previous project, *Characterizing the Kickapoo Creek in Henderson County*, also funded by TSSWCB, which TIAER conducted in partnership with the Angelina-Neches River Authority (ANRA). Reports associated with this characterization project can be accessed from the project website:

<https://img1.wsimg.com/blobby/go/a8e964db-a942-4185-8025-413095321e29/downloads/Kickapoo.Characterization.Final.Report.pdf?ver=1645118653396>

For more information about this document of the Kickapoo Creek in Henderson County WPP, please visit the project website at: <https://kickapocreekwpp.com/>.

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## Executive Summary

Kickapoo Creek in Henderson County is a rural watershed located in east Texas within Henderson and Van Zandt Counties. The Kickapoo Creek Watershed Partnership was formed to create this guidance document. The goal of the partnership is to improve the overall health of the Kickapoo Creek in Henderson County watershed.

### Problem Statement

Kickapoo Creek (0605A) has a history of elevated bacteria concentrations, and since 2000, the Texas Commission on Environmental Control (TCEQ) has listed Water Body 0605A as impaired for bacteria based on the Texas State Water Quality Standards (TSWQS). This impairment means that Kickapoo Creek does not meet the criterion for primary contact recreation (PCR) indicating an increased health risk if participating in activities, such as swimming, which have a high likelihood of water ingestion. The criterion for PCR is 126 colonies per 100 milliliters (mL). The TCEQ assesses support by comparing the geometric mean of *Escherichia coli* from samples collected over a set period (generally 7 years) as part of its water quality inventory, which is conducted once every two years. The water quality inventory is presented within the Texas Integrated Surface Water Quality Report. The most recently approved Texas Integrated Report from 2020 indicated bacteria impairments within assessment units (AUs) 0605A\_01 and 0605A\_02. The 2020 Texas Integrated Report also indicated a depressed dissolved oxygen impairment for AU 0605A\_01.

## Kickapoo Creek Watershed Protection Plan Overview

A watershed protection plan is a locally, voluntarily driven way to address complex water quality problems that cross political boundaries. **A WPP serves as a framework to better leverage and coordinate resources of local, state and federal agencies, in addition to non-governmental organizations.** The Kickapoo Creek WPP follows the Environmental Protection Agency's (EPA) nine key elements that are designed to provide guidance for the development of an effective WPP (EPA, 2008).

### The Watershed Approach

The watershed approach is widely accepted by state and federal water resource management, the watershed approach is used to facilitate water quality management. The U.S. Environmental Protection Agency (EPA) describes the watershed approach as a "flexible framework for managing water resource quality and quantity within a specified drainage area or watershed" (EPA, 2008). One important factor of the watershed approach is that it focuses on hydrologic boundaries to address potential water quality impacts to all stakeholders.

## Pollutant Sources

Backed with credible science, stakeholder input was used to identify potential sources of fecal-derived bacteria pollutants and DO depressing nutrient pollutants. Sources of bacteria loadings identified in the watershed include: cattle, wildlife, and domestic pets/animals, permitted discharges, unauthorized discharges, and failing on-site sewage facilities (OSSFs).

### Recommended Actions

Six primary recommended actions were made to improve water quality in the Kickapoo Creek in Henderson County watershed. Individual recommendations were crafted to deal with bacteria and

nutrient pollution but in many cases will have ancillary effects on other pollutants as well. Briefly, these actions are as follows:

### 1. Water Quality Management Plans or Conservation Plans

To manage bacteria nutrient loadings from cattle and other livestock more effectively, voluntary implementation of site-specific water quality management plans and conservation plans are necessary. These plans include technical assistance to help landowners implement best management practices that improve land stewardship and protect water quality. These plans can also help landowners obtain some financial assistance to implement the plans. Each plan is unique to the individual landowner's needs and wants. Some examples of management practices are brush management, alternate water and shade areas for livestock, fencing, and buffer strips.

### 2. Feral Hog Control

Feral hog management was identified as a big need in the Kickapoo Creek watershed. Active and passive management controls will be implemented throughout the watershed to help control populations and reduce damage to lands and riparian areas. Landowners will be encouraged to continue voluntary trapping and removal of feral hogs with assistance from various agencies. Educational programs will be brought to the watershed to discuss proper management techniques.

### 3. On-Site Sewage Systems

Failing OSSFs, in particular those located close to a waterbody, have been known to contribute to water quality impairments. The strategies to improve OSSF management include educational programs on how to operate and maintain septic systems. Priority will also be given to identifying, repairing, and replacing failing OSSFs as funds are available.

### 4. Sanitary Sewer Overflows (SSOs)

Although infrequent, SSOs and unauthorized WWTF discharges can contribute to bacteria loads. Identifying and replacing failing infrastructure is important to prevent unauthorized discharges. Education and outreach are also important to teach homeowners about the proper disposal of fats, oils, grease, and other disposables so they do not cause damage to collection systems.

### 5. Illicit Dumping

Illicit dumping is difficult to quantify in terms of impact on bacteria and nutrient loadings but can cause health and safety issues throughout the watershed. Educational signage will be increased at bridges and road crossings to try to reduce dumping at these locations. Hazard waste collection events will also be brought in throughout the watershed to provide an appropriate way to dispose of hazardous materials.

### 6. Pet Waste

Pet waste was identified as a contributor to bacteria and nutrient loadings in the watershed. Outreach and education are key components to the proper management of pet waste by owners. Increasing the amount of pet waste stations in public parks and apartment complexes will also increase the likelihood of proper waste disposal.

# Chapter 1

## Introduction to Watershed Management

### The Watershed Approach

The watershed approach is widely accepted by state and federal water resource management agencies to facilitate water quality management. The US Environmental Protection Agency (EPA) describes the watershed approach as “a flexible framework for managing water resource quality and quantity within a specified drainage area or watershed” (EPA 2008). The watershed approach requires engaging stakeholders to make management decisions that are backed by sound science (EPA 2008). One critical aspect of the watershed approach is that it focuses on hydrologic boundaries rather than political boundaries in order to address potential water quality impacts to all potential stakeholders.

A stakeholder is anyone who lives, works, has interest within the watershed or may be affected by efforts to address water quality issues. Stakeholders may include individuals, groups, organizations, or agencies. The continuous involvement of stakeholders throughout the watershed approach is critical for effectively selecting, designing, and implementing management measures that address water quality throughout the watershed.

### Watershed Protection Plan

Watershed protection plans are locally driven mechanisms for voluntarily addressing complex water quality problems that cross political boundaries. A WPP serves as a framework to better leverage and coordinate resources of local, state, and federal agencies, in addition to non-governmental organizations.

The Kickapoo Creek WPP follows the EPA’s nine key elements, which are designed to provide guidance for the development of an effective WPP (EPA 2008). WPPs will vary in methodology, content, and strategy based on local priorities and needs; however, common fundamental elements are included in successful plans and include (see Appendix C – Elements of Successful Watershed Protection Plans):

1. Identification of causes and sources of impairment
2. Expected load reductions from management strategies
3. Proposed management measures
4. Technical and financial assistance needed to implement management measures
5. Information, education, and public participation needed to support the implementation
6. Schedule for implementing management measures
7. Milestones for the progress of WPP implementation
8. Criteria for determining success of WPP implementation
9. Water quality monitoring

### Adaptive Management

Adaptive management consists of developing a natural resource management strategy to facilitate decision-making based on an ongoing science-based process. Such an approach includes results of continual testing, monitoring, evaluating applied strategies, and revising management approach to incorporate new information, science, and societal needs (USEPA 2000).



As management measures recommended in a WPP are put into action, water quality and other measures of success will be monitored to adjust as needed to the implementation strategy. The utilization of an adaptive management process will help to focus effort, implement strategies, and maximize the impact on pollutant loadings throughout the watershed over time.

### Education and Outreach

The development and implementation of a WPP depend on effective education, outreach, and engagement efforts to inform stakeholders, landowners, and residents of the activities and practices associated with the WPP. Education and outreach events provide the platform for the delivery of new and/or improved information to stakeholders through the WPP implementation process. Education and outreach efforts are integrated into many of the management measures that are detailed in this WPP.

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