

Implementing Agricultural Nonpoint Source Components of the Mill Creek Watershed Protection Plan

FINAL REPORT

TSSWCB PROJECT 16-09



**AUSTIN COUNTY AND WASHINGTON SOIL AND WATER
CONSERVATION DISTRICTS**

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TABLE OF CONTENTS

• EXECUTIVE SUMMARY	Page 3
• MILL CREEK WATERSHED MAP	Page 4
• INTRODUCTION	Page 5
• PROGRAM DEVELOPMENT	Page 7
○ INVENTORY OF COST-SHARED BMPS	Page 7
• CONCLUSIONS	Page 9

EXECUTIVE SUMMARY

The Austin County Soil and Water Conservation District with the assistance of the Washington County Soil and Water Conservation District (SWCDs), working cooperatively with the Texas State Soil and Water Conservation Board (TSSWCB) Wharton Regional Office and the United States Department of Agriculture – Natural Resources Conservation Service (NRCS), provided technical and financial assistance to agricultural producers in the Mill Creek watershed.

The development, installation and maintenance of water quality management plans (WQMPs) in the Mill Creek watershed was and continues to be a success. A District Technician was hired and worked cooperatively with the TSSWCB Wharton Regional Office and NRCS to provide agricultural producers with the opportunity to voluntarily implement best management practice (BMPs) that would have a positive impact on the Mill Creek watershed.

Through this project, a total of 10 WQMPs were developed and implemented on approximately 2,500 acres. A majority of the practices installed were related to livestock management, which included fencing, prescribed grazing, water wells, solar pumps, water storage tanks, livestock pipelines and water troughs. In addition, nutrient and pest management or herbaceous weed control was applied to all 2,500 implemented acres, with the exception of wildlife areas, where those practices do not apply. The District Technician, TSSWCB Wharton Regional Office, and NRCS Field Office worked with the SWCDs and local producers to educate them on their operation, the WQMP program, proper soil sampling, and water quality. They also presented at field events, field days, and were active in the development of the Mill Creek Watershed Protection Plan (WPP).

Implementation of WQMPs has been and will continue to be a key component in the overall effort to reduce bacteria, nutrients, and sedimentation and improve water quality in the Mill Creek watershed.



Legend

- Plans
- Rivers
- Cities
- Mill Creek WS
- Counties



Mill Creek Watershed



INTRODUCTION

The Mill Creek is formed by two forks, East and West Mill Creek, in southwest Washington County which unite near Bellville, TX in Austin County to form the main stem. The watershed is almost 412-square-miles (263,450 acres) and lies within the Brazos River Basin. Both the East and West forks' headwaters are just north of SH 290 near Burton. These forks flow south parallel with each other until, they join 4 miles west of Bellville. Then the creek continues for 14 miles until it reaches the Brazos River. There are many pools in the East and West Forks that are connected when the creek is flowing after rainfall events. The East fork is also fed by springs and therefore flows more consistently than the West fork. The main stem of Mill Creek flows consistently throughout the year receiving flows from the East and West fork as well as the Bellville wastewater treatment facility. The East and West forks of the creek are in the Oaks and Prairies Region of Texas and the lower portion of the watershed is in the Coastal Prairies Region. Cities in the watershed include Bellville, Burton and Industry with populations of 4,236, 301, and 326, respectively. Also, 10% of the watershed comes from the city of Brenham, pop. 16,951,

Over two-thirds of the watershed is used for livestock and hay production or wildlife habitat. Many pastures are planted in improved bermudagrasses or bahiagrasses for grazing and/or hay production. Only one percent of the watershed, near the mouth of Mill Creek, is cropland where rice, corn, cotton, and sorghum are grown. In recent years, there has been an increasing interest in providing wildlife habitat, which often includes planting native tall grasses, such as bluestems, Indian grass, and switchgrass. Wooded areas account for roughly 10% of the watershed and wooded riparian areas account for an additional 5%. These woods include post oaks, hackberry, sycamore, elm, hickory, black walnut, pecan, live oak, black jack oak, cedar, juniper, loblolly pine, Chinese tallow, yaupon, husiache, and mesquite. Wildlife present includes white-tailed deer, feral hogs, beaver, bobcat, coyote, fox, skunk, squirrel, and many other small mammals and birds. It has also been noted that the creek supports a high degree of biodiversity and rare gammagrass-switchgrass species that grow in its bottomlands. Fish species include channel catfish, common carp, spotted gar, and multiple species of sunfish and minnows. As well as macroinvertebrates such as mayflies, midges, worms and aquatic beetles.

The soils in this area varies from well drained clays to loamy fine sands. The main water formation under the watershed is the Fleming Formation and Willis Sands, which are part of the Gulf Coast Aquifer. In addition, the Alluvium of the Brazos River and Mill Creek Alluvium are found adjacent to the water bodies for which they are named. The groundwater in the area ranges from moderately hard to very hard. Most groundwater in the area meets all drinking water standards, fluoride has frequently been observed in less than optimum levels and water in the alluvial formations is susceptible to contamination due to its shallow depth. Groundwater

serves as the primary source of drinking water for the vast majority of residents in the watershed.

Mill Creek has been monitored by Texas Commission on Environmental Quality (TCEQ) under various programs since 1974. In 2006, Mill Creek was listed on the Texas Integrated Report of Surface Water Quality, formerly known as the Texas Water Quality Inventory and 303d list, with a concern for impaired fish community in its downstream portion; it was listed again in 2008. In 2010, 2012, 2014 and 2016, Mill Creek appeared on the list as impaired for elevated levels of bacteria and contact recreation.

Texas A&M AgriLife Extension engaged the Hosuton-Galveston Area Council (H-GAC) to initiate an extensive monitoring program on Mill Creek and its tributaries as part of the WPP development process. Sampling Occurred over 13 sites where they were able to identify that increased flow is positively correlated to elevated levels of bacteria. They also determined no individual subwatershed was a leading contributor over any other subwatershed. Currently 8 of the 13 sites are being monitored quarterly.

The Mill Creek Watershed Partnership, made up of private individuals, local organizations, county and municipal governments, and state and federal agencies, worked together to create Watershed Protection Plan (WPP). A WPP is a holistic locally driven plan that combines scientific and regulatory water quality factors with social and economic considerations to coordinate activities and resources to manage water quality. The Mill Creek was selected for this based on its repeated appearance on the Texas Water Quality Inventory and 303d list and also a Recreational Use Attainability Analysis (RUAA) that was conducted on Mill Creek in 2007, which concluded that Mill Creek currently supports, and has historically supported, contact recreation. Which in turn, affirmed that the contact recreation use designation and concurrent water quality standard assigned to Mill Creek were appropriate. In the WPP, the Mill Creek Watershed Partnership identified that bacterial loads needed to be reduced by 43% annually to achieve water quality goals and protect Mill Creek in the future by considering long-term population growth. The Mill Creek Watershed Partnership decided the best way to meet those goals would be to work with TSSWCB and the local SWCDs to implement Water Quality Management Plans on agricultural lands.

A WQMP is a site-specific plan developed through and approved by SWCDs for agricultural or silvicultural lands. The plan includes appropriate land treatment practices, production practices, management measures, technologies or combination thereof. The purpose of WQMPs are to achieve a level of pollution prevention or abatement determined by the TSSWCB, in consultation with the local SWCDs, to be consistent with state water quality standards.

This project was incorporated into the WPP in order to address the potential agricultural sources of NPS pollution and will be coordinated with educational and assessment activities planned in the Mill Creek Watershed.

PROGRAM DEVELOPMENT

This project consisted of the TSSWCB working with Austin County SWCD #347 and Washington SWCD #348 to provide technical and financial assistance to landowners for the development, implementation, and/or maintenance of WQMPs.

Through this project, a District Technician was hired by the Austin County SWCD to coordinate technical and financial assistance activities between the TSSWCB, cooperating SWCDs, NRCS and all other interested parties in the Mill Creek Watershed. The District Technician promoted the availability of assistance through the local SWCDs.

Producers applied for assistance and were served on a first come, first serve basis. The District Technician, working in cooperation with the NRCS, developed WQMPs based on the criteria outlined in the Field Office Technical Guide (FOTG), a publication of the NRCS. The FOTG represents the best available technology and is already tailored to meet the needs of SWCDs all over the nation. A WQMP includes the following:

- Water Quality Management Plan Map showing boundaries, fields, land use, acres and facilities
- Soils Map
- Soils Descriptions
- Topography Map
- Location Map
- Conservation Plan of Operations
- Grazing Management Plan (required when cattle are present)
- Soils Test (required when nutrients are applied)
- Win-Pst Analysis and Integrated Pest Management Jobsheet (when chemicals are applied)

Once the WQMP was developed and approved by NRCS and the local district, it was then sent to the TSSWCB Wharton Regional Office for technical review and certification. Upon certification of the WQMP, the plan could be implemented.

The District Technician worked with landowners to implement BMPs laid out in the WQMP. The major BMPs installed included:

- Cross-fencing (382): 7659 ft of fence has been installed
- Prescribed Grazing (528): 1181.1 acres of prescribed grazing has been implemented
- Livestock Pipeline (516): 5531 ft of livestock pipeline has been installed
- Watering Facilities (614): 13 watering facilities have been installed
- Water Well (642): 1 water well has been installed
- Solar Pump (533): 3 solar pumps have been installed

Other BMPs installed were brush management (314), nutrient management (590), integrated pest management (595), herbaceous weed treatment (315), forage harvest management (511) and upland wildlife management (645). The District Technician helped landowners acquire any cost-share assistance available. Once the practice was implemented and certified, the cost-share was paid. Status reviews were conducted annually on all WQMPs developed and certified through this project to ensure the BMPs were installed and maintained properly.

In addition to the development, installation, and maintenance of WQMPs, the District Technician and TSSWCB Wharton Regional Office worked with the SWCDs and local producers to educate them on their operation, the WQMP program, proper soil sampling and water quality. The District Technician and TSSWCB Wharton Regional Office attended educational events in the Mill Creek watershed disseminated information on this project and other agricultural related issues. They were also active in the development of the Mill Creek WPP by serving on the Technical Advisory Group to the Steering Committee.

CONCLUSIONS

The development, installation, and maintenance of WQMPs in the Mill Creek Watershed was and continues to be a success. The District Technician, working cooperatively with the TSSWCB Wharton Regional Office and NRCS, provided agricultural producers with the opportunity to voluntarily implement BMPs that would have a positive impact of the Mill Creek.

Through this project, a total of 10 WQMPs were developed and implemented on approximately 2,500 acres. A majority of the practices installed were related to livestock management, which included cross-fencing, prescribed grazing, water wells, solar pumps, water storage tanks, livestock pipelines and water troughs. In addition, nutrient and pest management or herbaceous weed control was applied to all 2,500 implemented acres, with the exception of wildlife areas, where those practices do not apply.

There is still a need to address agricultural NPS issues in the Mill Creek watershed.