

# Implementing Agricultural Nonpoint Source Components of the Lavon Lake Watershed Protection Plan



Collin County Soil and Water Conservation District #535

Final Report TSSWCB Project #18-09

FUNDING PROVIDED THROUGH THE CLEAN WATER ACT §319(h) NONPOINT  
SOURCE GRANT FROM THE TEXAS STATE SOIL AND WATER CONSERVATION  
BOARD AND THE U.S. ENVIRONMENTAL PROTECTION AGENCY

# Executive Summary

The Collin County Soil and Water Conservation District (SWCD) is a subdivision of State government which, through its partnerships, works to bring an understanding of the local needs of the county and resources to local agricultural producers. On this project, Collin County SWCD worked cooperatively with the Texas State Soil and Water Conservation Board (TSSWCB) and the Natural Resources Conservation Service (NRCS), providing technical and financial assistance to agricultural producers in the Lavon Lake watershed through a Clean Water Act §319(h) nonpoint source grant from the TSSWCB and the U.S. Environmental Protection Agency.

Lavon Lake watershed spans over 492,000 acres, with most of that area situated in Collin County. Upper and outer reaches of the watershed lie in Grayson, Fannin, and Hunt Counties, where producers are supported by Upper Elm Red SWCD, Fannin SWCD, and Upper Sabine SWCD, respectively, on a local level.

The development and implementation of Water Quality Management Plans (WQMPs) in the Lavon Lake watershed continues to be a success. Through this project, a District Technician was hired by Collin County SWCD and worked cooperatively with neighbor SWCDs, TSSWCB and NRCS to provide agricultural producers with the opportunity to voluntarily implement Best Management Practices (BMPs), which have a positive impact on water quality in Lavon Lake.

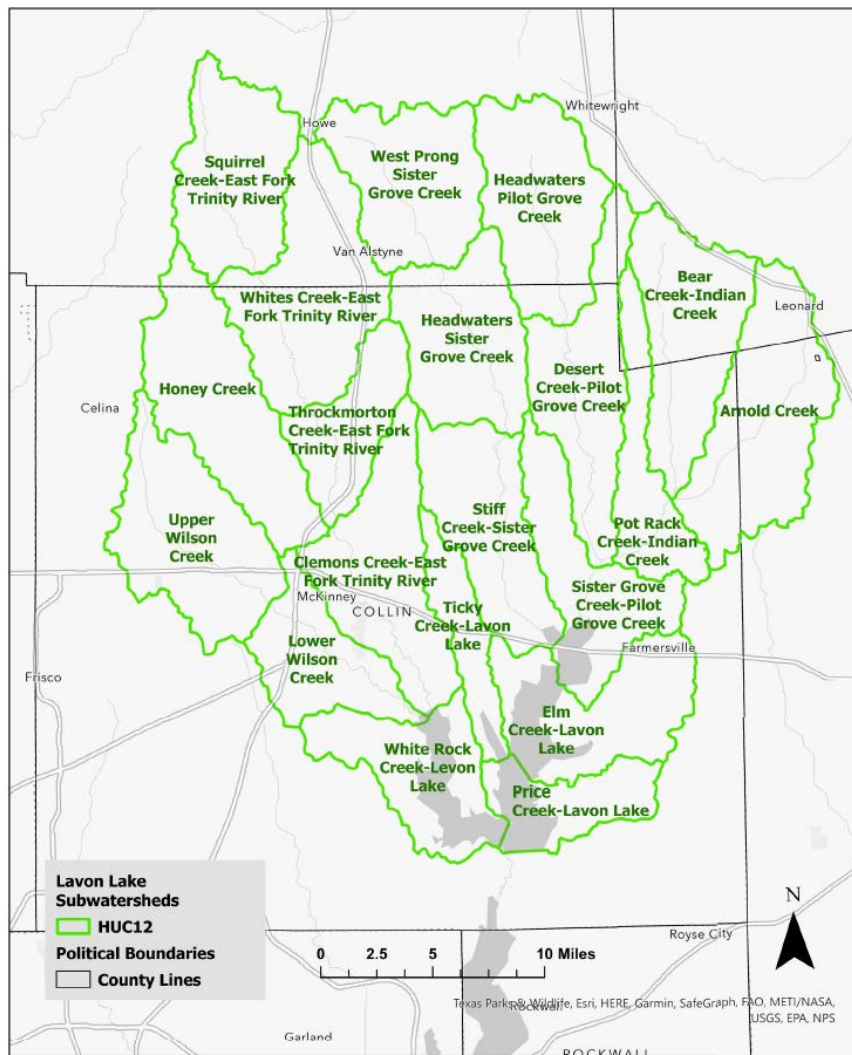
Through this project a total of 10 WQMPs were developed and certified to address resource concerns over approximately 2,984 acres of private land within Lavon Lake watershed. Examples of BMPs installed were Pasture and Hay Planting, Range Planting, Critical Area Planting, Fence, Prescribed Grazing, and Brush Management. Cost-share incentives were provided to producers upon completion of eligible practices to their respective specifications. A total of \$19,767.89 was reimbursed to participants.

The District Technician and TSSWCB worked with the SWCDs and local producers to educate them on the WQMP program, proper soil sampling, and water quality. The District Technician and TSSWCB also presented at workshops, field days, and actively participated in stakeholder meetings of the Lavon Lake Watershed Protection Plan (WPP).

Implementation of WQMPs has been and will continue to be a key component in the overall effort to improve water quality in Lavon Lake watershed.

# Introduction

In a collaborative effort led by North Texas Municipal Water District (NTMWD), Texas State Soil and Water Conservation Board (TSSWCB), and Texas A&M AgriLife Extension Service, stakeholders drove the development of a WPP for Lavon Lake. Lavon Lake watershed lies predominantly in Collin County, with additional reach into Grayson, Fannin, and Hunt Counties (Figure 1). Over the course of 8 meetings open to the public in 2016-2017, local landowners and business owners, public officials and government agencies attended as the Lavon Lake Watershed Partnership reviewed information and provided local perspective and direction to the WPP.



**Figure 1.** Lavon Lake watershed is comprised of 20 sub-watersheds assigned unique hydrologic unit codes (HUCs) and named for tributary waterways. A majority of the watershed lies in Collin County (more than 345,000 acres), followed by Grayson County to the north (100,000 acres), Fannin County to the northeast (27,000 acres) and Hunt County to the east (18,000 acres).

TSSWCB project 18-09, entitled Implementing Agricultural Nonpoint Source Components of the Lavon Lake Watershed Protection Plan, was designed to promote Agricultural Nonpoint Source pollution management measures in the WPP.

Collin County SWCD hired a technician to promote, develop, and implement WQMPs. The technician position was responsible for identifying, informing, and encouraging participation among agricultural producers for whom technical assistance and financial assistance would be available to develop and implement WQMPs.

Through the implementation of WQMPs, producers have made voluntary efforts to protect natural resources in Texas with support from the combined technical and financial assistance offered by the local SWCDs, TSSWCB, EPA, and NRCS. A WQMP is a site-specific plan developed through, and approved by, SWCDs which includes appropriate land treatment practices, production practices, management measures, and technologies that prevent and abate agricultural and silvicultural nonpoint source pollution. The BMPs prescribed in a WQMP are defined in the NRCS Field Office Technical Guide. Because of this, and similar programs, the State of Texas has been able to demonstrate major successes in the improvement of water quality conditions through on-the-ground conservation results.

Expanding participation of agricultural producers in WPP implementation is essential to achieve water quality improvement. As an established and well-known local entity, the Collin County SWCD and its neighbors in Lavon Lake watershed are uniquely situated to engage and support agricultural producers in watershed restoration and protection efforts, including implementation of appropriate BMPs to address nonpoint source pollution. Lavon Lake which serves as the primary water source for more than 2 million North Texas residents, and a watershed which hosts cities like Frisco and McKinney is still mostly undeveloped and/or agricultural land. Addressing agricultural nonpoint source pollution is a key aspect of overall water quality conservation in the area.

## **Program Development**

The Collin County SWCD worked cooperatively with the TSSWCB Dublin Regional Office and the NRCS, provided technical and financial assistance to agricultural producers in the Lavon Lake Watershed. Through this project, a total of 10 WQMPs were developed and implemented on 2,893.5 acres in Lavon Lake watershed. The predominant land use was cattle grazing on pasture (57%) and range (22%) management principles. Crop production, including hay,

accounted for about 13% of the certified acreage. About 5% of the land was managed for wildlife, primarily in forested floodplains.

The District Technician was based in the McKinney, TX USDA Service Center and worked under the direction of the Collin County SWCD Board of Directors. WQMPs were developed according to the NRCS Field Office Technical Guide. Once a WQMP was developed, it was sent for technical review and certification to the TSSWCB regional office in Dublin, TX. Upon certification of the WQMP, the District Technician assisted landowners in applying for and obtaining financial incentives to aid in implementation of BMPs prescribed in their WQMPs, and guided them through implementation of their chosen practices. For those producers utilizing cost-share incentive funding, the District Technician tracked utilization of obligated financial incentives and assisted landowners in utilizing these funds on schedule.

Planning and implementation of TSSWCB approved BMP practices are summarized in Table 1.

**Table 1.** Summary of practices eligible for WQMP funding which were included in certified plans, approved for cost-share incentives, and completed to earn reimbursements.

| BMP (Code)                          | Included in Certified WQMPs | Approved for Cost-Share Funds | Implemented to Earn Reimbursement |
|-------------------------------------|-----------------------------|-------------------------------|-----------------------------------|
| Critical Area Planting (342)        | 18.8 Ac.                    | 12.1 Ac.                      | 3.9 Ac.                           |
| Fence (382)                         | 4,890 Ft.                   | 4,425 Ft.                     | 1,085 Ft.                         |
| Grade Stabilization Structure (410) | 1 Structure                 | 1 Structure                   | N/A                               |
| Pasture and Hay Planting (512)      | 227.9 Ac.                   | 199.4 Ac.                     | 150.6 Ac.                         |
| Range Planting (550)                | 103.7 Ac.                   | 65.4 Ac.                      | 9.7 Ac.                           |
| Terrace (600)                       | 18,291 Ft.                  | 10,179 Ft.                    | 8,793 Ft.                         |
| Brush Management (314)              | 98.5Ac.                     | 59.9 Ac.                      | 6.5 Ac.                           |

The District Technician worked closely with fellow SWCD staff and Directors, TSSWCB, NRCS, NTWMD, and Texas A&M AgriLife Extension to educate stakeholders about water quality issues and the dedicated technical and financial assistance made available by this project.

Collin County SWCD staff identified a shared target audience, developed flyers and hosted webinar presentations with support from TSSWCB to reach agricultural landowners that were eligible for WQMP assistance. The District Technician regularly attended local AgriLife events to support extension educational efforts and raise awareness for the project among producers, attending county ag expos, range and pasture workshops, a cattleman’s field day, and numerous “Landowner 101” workshops. The District Technician and NTMWD watershed

coordinator worked together to define and refine goals for stakeholder engagement, and explore additional opportunities for the SWCD and its cooperating producers to implement best practices in Lavon Lake watershed. NRCS provided technical support in the form of professional training and practice standards/specifications leveraged by the District Technician.

The District Technician and NRCS worked with landowners to implement BMPs. The examples of BMPs installed include:

Forage and Biomass Planting/Pasture and Hay Planting

This practice involves the planting of a grass(s) species on a cultivated field to prevent erosion, reduce runoff and create forage for livestock. Participants planted 150.6 acres into primarily bermudagrass, with B. Dahl bluestem and green sprangletop added for diversity to address microclimatic differences on one hillside pasture.



**Figure 5.** A field just after planting into a well-prepared seedbed (top), productive field being cut for the first time (middle), and wind-rowed hay in its second season of production (bottom). Note that these photos reflect more than one field/property.

### Range Planting

This practice is the act of planting a mix of grass species on open rangeland needing to be covered by vegetation. This practice increases ground cover, improves soil health, water quality, and provides grazing land for livestock. A native seed mix was planted over 9.7 acres.

### Critical Area Planting

Critical area planting is performed to stabilize areas with existing or expected high rates of erosion. On 3.9 acres, gullies were re-shaped and critical area planting was applied.



**Figure 6.** Severe case of classic gully erosion (top) which was reshaped by heavy grading and sprigged to bermudagrass (middle). Recovery of this field was further supported by applying cover crop with the assistance of NRCS (bottom).



## Fence

This practice helps divide a producer's property into sections so that a grazing plan can be followed. The fence allows pastures and rangeland to be rested from grazing pressure to allow for vegetation growth. Producers installed cross fences to facilitate prescribed rotational grazing and/or exclude livestock from sensitive riparian areas. A total of 1,085 linear feet of fence was installed and certified.



**Figure 7.** Cross fence built to restrict access of livestock to a sensitive riparian zone.

### Brush Management

Under this practice, the producer removes, reduces, or manipulates non-herbaceous plants for a variety of reasons, including forage for livestock management.



**Figure 4.** Aerial images depict a field before and after mechanical brush management was applied. Encroaching eastern red cedar canopy was removed to improve space and conditions for native range conditions. Range planting was also performed on this site to accelerate recovery of the field.

Other BMPs planned and/or applied without financial incentives included Nutrient Management (590), Herbaceous Weed Control (315), Prescribed Grazing (528), Conservation Cover (327), Conservation Crop Rotation (328), Upland Wildlife Habitat Management (645), and Grassed Waterway (412).

## Conclusions

The Collin County SWCD, working cooperatively with neighboring SWCDs, TSSWCB and NRCS, provided individualized technical and financial assistance to agricultural producers in the Lavon Lake watershed through a Clean Water Act §319(h) nonpoint source grant from the TSSWCB and the U.S. Environmental Protection Agency.

The development and implementation of WQMPs in the Lavon Lake watershed is an ongoing success. There is both the need and vision for this project to continue and grow its efforts. With more funding for financial assistance and more WQMPs developed, load reductions and further improvement of water quality can be achieved.

A total of 10 WQMPs were certified on nearly 2,900 acres. Subwatersheds in the eastern half of Lavon Lake watershed are home to some of the most agriculturally active communities in North Texas. Pasture and hay planting, terrace, and brush management were the most common practices installed by producers.

The District Technician and TSSWCB worked with the SWCDs and local producers to educate them on BMPs for water quality and development of WQMPs. The District Technician also engaged with producers in webinars, workshops, ag expos, and field days to raise awareness for this conservation planning opportunity and the broader goals of the Lavon Lake Watershed Protection Plan.

TSSWCB has partnered with the Collin County SWCD to continue this effort in fiscal year 2024 and beyond. The new project will continue utilizing CWA Section 319(h) grant funding to help landowners develop and implement BMPs in the watershed.