

LOWER COLORADO RIVER AUTHORITY

CREEKSIDE CONSERVATION AND LAND STEWARDSHIP PROGRAM

FINAL REPORT

Cooperative Agreement 11-03



Funding provided through a Clean Water Act §319(h) Nonpoint Source Grant from the Texas State Soil and Water Conservation Board and the U.S. Environmental Protection Agency



TABLE OF CONTENTS

| | |
|--------------------------|----|
| ACKNOWLEDGEMENTS..... | 3 |
| EXECUTIVE SUMMARY..... | 4 |
| INTRODUCTION..... | 5 |
| IMPLEMENTATION..... | 6 |
| PROJECT SNAPSHOTS..... | 8 |
| EVALUATION..... | 10 |
| TECHNOLOGY TRANSFER..... | 13 |
| CONCLUSION..... | 17 |

ACKNOWLEDGEMENTS

This report highlights the soil and water conservation benefits the federal Clean Water Act (CWA) §319(h) Nonpoint Source grant provided by the Texas State Soil and Water Conservation Board and the U.S Environmental Protection Agency to the lower Colorado River basin of Texas, and recognizes the conservation partnerships that made this project a success.

Special acknowledgement is given to the agricultural landowners (producers) who invested time and resources in the interest of land stewardship, to the U.S. Environmental Protection Agency and the Texas State Soil and Water Conservation Board for providing support to this partnership, and to the following organizations and staff for providing an invaluable service in the interest of land stewardship.

- Soil and Water Conservation District (SWCD) Boards of Directors and staff
- Texas State Soil and Water Conservation Board (TSSWCB) Board of Directors, Management and Staff
- USDA Agricultural Research Service (ARS)
- USDA Natural Resources Conservation Service (NRCS)

EXECUTIVE SUMMARY

This project consisted of the Texas State Soil and Water Conservation Board (TSSWCB) working cooperatively with Lower Colorado River Authority (LCRA), Soil and Water Conservation Districts (SWCDs), Natural Resource Conservation Service (NRCS) and Agricultural Research Service (ARS) to provide technical and financial assistance and education for producers to plan and implement soil and water conservation Best Management Practices (BMPs) on private land. Through this project, 39 comprehensive conservation plans of operation were developed for over 34,000 acres of private land with the collective purpose of reducing sedimentation and agricultural nonpoint source pollution throughout the Colorado River basin area of Bastrop, Blanco, Burnet, Colorado, Fayette, Lampasas, Llano, Matagorda, San Saba, Travis and Wharton Counties.

In fiscal year 2011, TSSWCB began using the Texas Best Management Evaluation Tool (TBET) to estimate nutrient and sediment reductions and BMP effectiveness. TBET is a simplified and customized user interface for the Soil and Water Assessment Tool (SWAT), which predicts pollutant losses from field under a variety of management scenarios and conservation practices. Based on TBET results, the project yielded the following nutrient and sediment reduction results:

- Nitrogen: 226,591 lb
- Phosphorus: 24,687 lb
- Sediment: 7,146 tons

Education and outreach is vital to instill a land stewardship ethic for long-term soil and water conservation. This project provided the technology transfer impetus for delivering a positive land conservation message. Education and outreach activities associated with this project included the following:

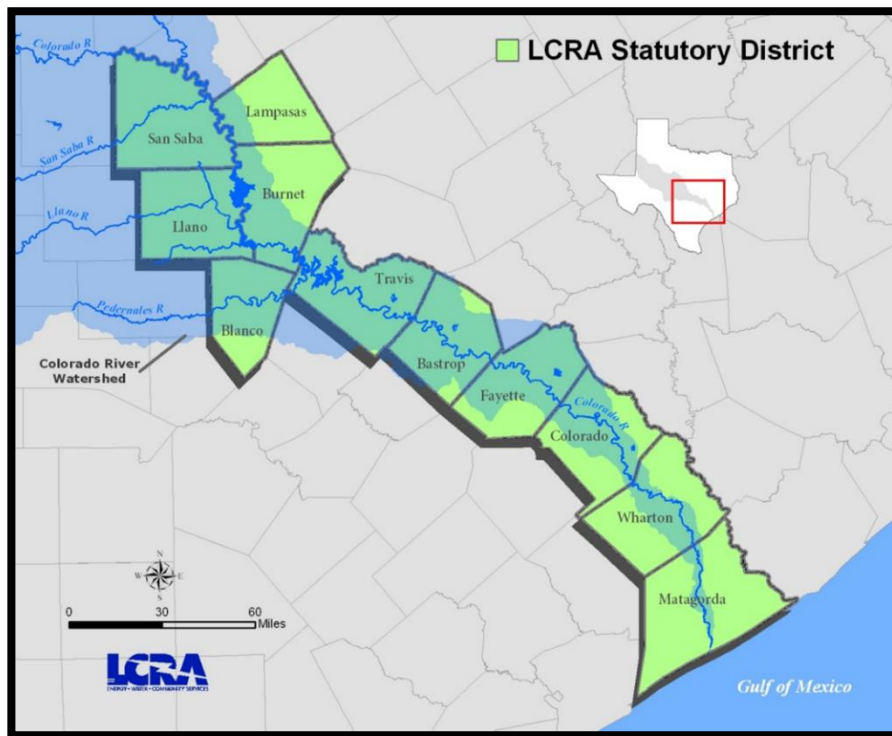
- 1 project video production
- 4 project site tours
- 90 soil and water conservation district board meeting presentations
- 8 public workshop presentations
- 1,000 LCRA Creekside Conservation Program rack cards distributed
- 1 Grant participant feature stories in newspapers and other publications
- 1 magazine article (*Cattleman Magazine*)
- 12 newspaper articles/releases

INTRODUCTION

The Lower Colorado River Authority (LCRA) was created in 1934 as a Texas conservation and reclamation district. The Enabling Legislation directs LCRA to “...prevent and aid in the prevention of soil erosion.” As manager and protector of the region’s main source of water, LCRA continues to encourage producers in the lower Colorado River basin to practice soil and water conservation.

LCRA began the Creekside Conservation Program in 1990 after a study determined that reducing sedimentation could be the cost-effective way to lengthen the lives of the Highland Lakes reservoirs and protect aquatic resources throughout the lower Colorado River basin of Texas. The resulting partnership between LCRA, private land owners, NRCS and local SWCDs provides a cost-share incentive for projects that help retain soil and enhance productivity on privately owned land. Through the program, NRCS field staff work with producers to implement conservation plans that improve the condition of their land according to NRCS technical guidelines, thereby increasing the land’s hydrologic function.

This §319(h) project focused on the Colorado River basin area of LCRA’s eleven statutory counties including Bastrop, Blanco, Burnet, Colorado, Fayette, Lampasas, Llano, Matagorda, San Saba, Travis and Wharton. In these counties, producers were provided technical and financial assistance to develop and implement 39 conservation plans of operation.



IMPLEMENTATION

LCRA project coordinators worked with SWCD and NRCS personnel to develop conservation plans for producers across the project region. NRCS provided the technical assistance necessary to compile and execute project plans, and conducted follow up certification and evaluation of project success. Local SWCD's provided a place for producers to sign up for the program, and to get technical assistance as well and education and outreach materials. The following is an overview of the process used throughout the duration of the project.

A. Project Solicitation: LCRA worked with NRCS and local SWCDs to promote the project through news releases, feature stories, workshops, field days and presentations before various civic groups.

B. Application Process: Individuals interested in participating in the project applied with the NRCS/SWCD office in their respective county. An applicant log was maintained at each NRCS/SWCD office in the eligible counties, and a master log was maintained by LCRA.

C. Determining Eligibility: NRCS conducted field work to determine if proposed conservation practices met NRCS and LCRA guidelines for approval. If requirements were met, then NRCS proceeded with conservation planning.

D. Planning and Implementation: NRCS developed Comprehensive Plans of Operation, compiled plan folders and provided copies to producers and LCRA. These folders contained maps, schedules, and contractual documents.

E. Project Certification and Payment: Upon project completion, NRCS field staff conducted certification procedures, insuring that completed projects met NRCS technical guidelines. LCRA would then provide cost-share reimbursement for the completed project.

F. Follow-up Monitoring: LCRA and NRCS staff routinely conducted photo tours of project sites to document progress before, during and after treatment. Each contract stipulated a period of three years in order to allow for longer term follow-up activities.

PROJECT TRACKING

The LCRA project coordinator worked closely with NRCS staff to develop tract maps and to make regular project site visits. Through the Creekside Program, a holistic approach is taken towards land management, and for each project, a conservation plan of operation is developed to encompass the entire land unit. Within these conservation planned acres, specific treatments are applied as indicated in Table 1.

COUNTY PARTICIPATION AND BEST MANAGEMENT PRACTICE SUMMARY

| County | Blanco | Burnet | Colorado | Fayette | Lampasas | Llano | San Saba | Travis | Total |
|----------------------------|--------|--------|----------|---------|----------|--------|----------|--------|--------|
| Number of Participants | 9 | 1 | 1 | 5 | 4 | 11 | 6 | 2 | 39 |
| Management Acres* | 8,531 | 600 | 459 | 1,444 | 575 | 16,643 | 4,653 | 1,490 | 34,095 |
| Pipeline Feet | 0 | 0 | 425 | 0 | 0 | 1,631 | 0 | 0 | 2,056 |
| Rangeland Reseed Acres | 0 | 0 | 0 | 59 | 40 | 0 | 0 | 0 | 99 |
| Cross Fencing Feet | 0 | 0 | 0 | 3,617 | 1,744 | 15,826 | 11,483 | 0 | 32,670 |
| Grade Structures/ Ponds | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 4 |
| Water Troughs/ Storage | 0 | 0 | 1 | 0 | 0 | 6 | 0 | 0 | 7 |
| Water Wells | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 5 |
| Brush Mgt. Acres | 598 | 135 | 0 | 0 | 62 | 334 | 325 | 495 | 1,949 |

* Management acres: The Creekside Conservation Program involved a holistic land management approach. For each project, LCRA and NRCS work with the producer to develop and implement a comprehensive plan of operation that encompasses the whole land unit. Each plan includes specific treatments as well as recommendations for facilitating practices such as prescribed grazing and upland wildlife habitat management.

Table 1

* Includes prescribed grazing and upland wildlife habitat management

PROJECT SNAPSHOTS

GRADE STABILIZATION STRUCTURE

In Fayette County, project participants completed construction of four grade stabilization structures to:

- ❖ Stabilize the grade and control erosion in natural and artificial channels
- ❖ Prevent the formation and advance of gullies
- ❖ Trap sediment and sediment-attached substances carried by runoff



**GRAZING MANAGEMENT
Cross Fencing, Water Source
Development, Upland Wildlife
Habitat Management**

Throughout the project region, landowners constructed over 32,000 linear feet of cross fencing and developed alternative water sources with the collective purpose of accomplishing the following:

- ❖ Implement a prescribed grazing plan and provide better distribution of grazing animals
- ❖ Improve desired species composition and vigor of plant communities
- ❖ Improve quality and quantity of forage for grazing and browsing animals' health and productivity
- ❖ Improve surface and/or subsurface water quality and quantity
- ❖ Improve riparian watershed function
- ❖ Reduce accelerated soil erosion and improve soil condition
- ❖ Improve the quantity and quality of food and/or cover available for wildlife



EVALUATION

POLLUTANT LOAD REDUCTIONS

The Texas Best Management Evaluation Tool (TBET) was used to compare estimated nutrient and sediment loading before and after project implementation. Highly dependent upon factors such as weather and the ability of producers to correctly install, operate, maintain BMP's implemented through the project, load reductions are estimates and should be regarded as "best case scenario". Nitrogen, phosphorus and sediment load reductions achieved through this project are as follows.

NITROGEN REDUCTION: 226,591 lb

PHOSPHORUS REDUCTION: 24,687 lb

SEDIMENT REDUCTION: 7,146 tons

HISTORICAL WATER QUALITY MONITORING DATA

Since its inception in 1990, the LCRA Creekside Conservation Program has enabled 277 agricultural producers to plan, implement and fund conservation projects on over 171,000 acres throughout the Colorado River basin area of Bastrop, Blanco, Burnet, Colorado, Fayette, Lampasas, Llano, Matagorda, San Saba, Travis and Wharton Counties.

For much of this same period, LCRA has served as the lead agency for the Clean Rivers Program (CRP). CRP is a multi-agency coalition established by the Texas Legislature in 1991 to accomplish the following:

- Encourage comprehensive and cooperative watershed planning
- Enhance public participation and outreach
- Maintain a basin-wide water quality monitoring program
- Provide a scientific response to water quality problems
- Identify, analyze, and report on water quality issues and potential causes of pollution

LCRA helps accomplish these goals on over 18,000 square miles throughout six watersheds within the basin.

| Watersheds in the Colorado River Basin | |
|--|--------------|
| Watershed | Square Miles |
| Lake Buchanan | 5,650 |
| Lake LBJ | 5,000 |
| Lake Travis | 1,830 |
| Lake Austin | 700 |
| Lower Basin | 2,200 |
| Coastal Watershed | 2,800 |

In 2012, program partners published the **2012 Basin Summary Report: A Summary of Water Quality in the Colorado River Basin 2007-2011**. The full report is accessible at <http://www.lcra.org/search/Pages/default.aspx?k=basin%20summary%20report>. This comprehensive report outlines accomplishments in water quality monitoring and coordinated outreach efforts. Highlights from this report are as follows.

- **Effects of Weather on Water Quality:** This reporting period was marked with a historic drought, one that left many streams dry and reservoirs at fractions of their capacity. The report cites these conditions as causes of water quality problems.
- **Public Involvement:** The Colorado River Watch Network (CRWN), a network of volunteer monitors established in 1988 reported approximately 120 volunteer samples for water quality parameters such as dissolved oxygen and pH at 133 sites between 2007 and 2011. Volunteers logged over 22,000 hours in this effort.

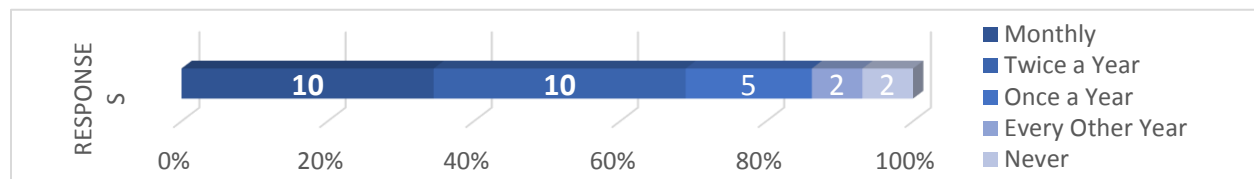
Given the thoroughness and success in water quality monitoring by CRP and the history of LCRA Creekside Conservation Program participation over a vast portion of the monitored region, the collective overlap indicates consistent and acceptable monitoring data and monitoring regimes. CRP will continue to monitor and provide quality assured data driven input from program partners and steering committees. Likewise, LCRA will consider data driven analysis when setting future priorities.

PROGRAM SURVEY

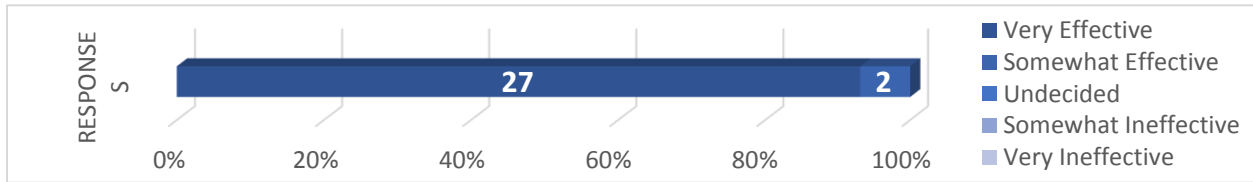
LCRA developed and distributed a survey to forty-six past and present Creekside Conservation Program participating producers to evaluate the level of conversation practices being maintained. Twenty-nine producers returned completed surveys, a 63% return rate.

Survey results that measured level of conservation practice maintenance and program satisfaction are summarized in the following charts:

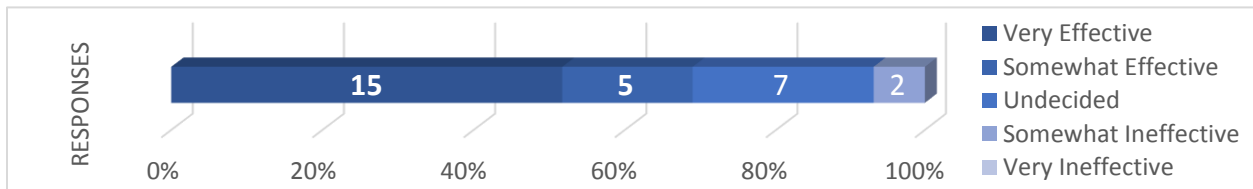
Question 1: How often have you maintained your Creekside Conservation Program project?



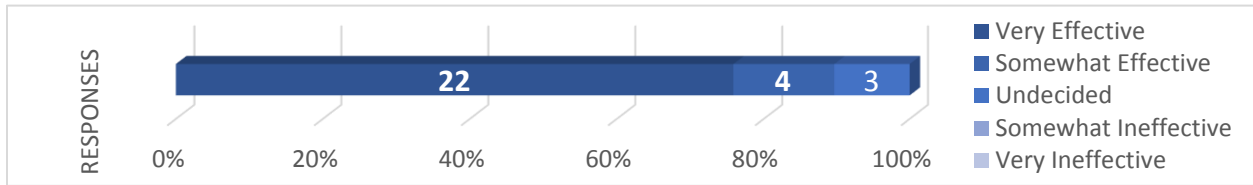
Question 2: Do you think the Creekside Conservation Program was effective in increasing rangeland health?



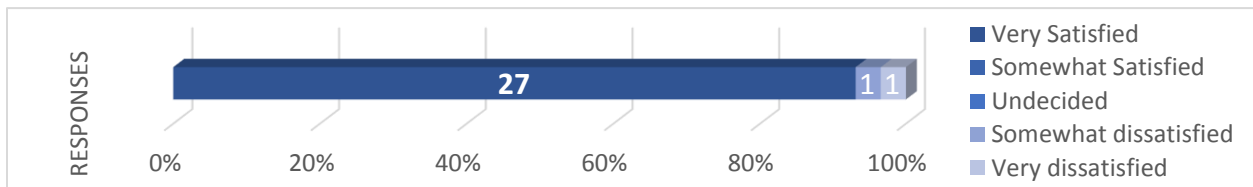
Question 3: How effective do you feel the Creekside Conservation Program was at reducing soil erosion on you property?



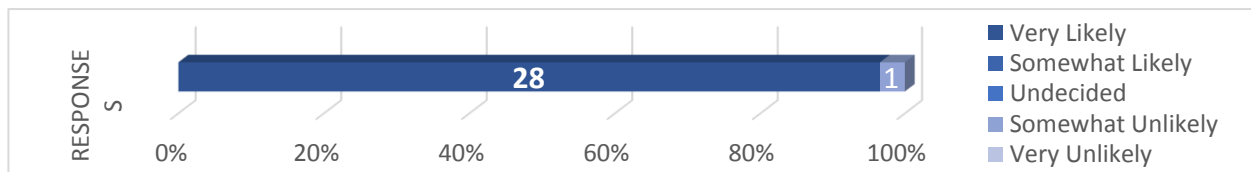
Question 4: How effective was the Creekside Program in increasing your awareness of soil and water conservation within the Colorado River watershed?



Question 5: Were you satisfied with using the Creekside Conservation Program?



Question 6: How likely would you be to recommend the Creekside Program to another producer?



TECHNOLOGY TRANSFER

Technology transfer was pivotal to the success of this project. Feature stories focusing on producers were submitted into local news publications and highlighted on LCRA's web site (www.lcra.org). LCRA presented program successes to potential producers during regularly scheduled educational field days, workshops and seminars.



FIELD DAYS, WORKSHOPS AND SEMINARS

LCRA project coordinators led field tours throughout the region, stayed in contact with the various SWCD Boards by regularly attending their monthly board meetings, and provided presentations and project updates to the SWCDs in the region. The various events participated in are listed below by county:

| COUNTY | YEAR | EVENT | ATTENDANCE |
|------------------|------|---|------------|
| Bastrop | 2014 | Beef Cattle & Forage Management Series | 75 |
| Blanco | 2012 | Blanco County Beef and Range Field Day | 75 |
| | 2012 | Dawson Ranch Field Tour | 20 |
| | 2014 | Blanco County Holt Ranch Water Quality Workshop | 120 |
| | 2015 | Hoppe-Odiorne Ranch Field Tour | 25 |
| Burnet | 2013 | Texas A&M AgriLife Extension Service Workshop | 50 |
| | 2014 | Burnet County Land Stewardship Round Table | 125 |
| Colorado | 2015 | Colorado County Rangeland Management Workshop | 75 |
| Fayette | 2015 | Fayette County Landowner Lunch & Learn | 100 |
| Matagorda | 2014 | Land Stewardship Lunch & Learn | 45 |
| San Saba | 2014 | Kasprzyk Ranch Tour | 11 |
| Travis | 2013 | Texas A&M AgriLife Extension Service Workshop | 60 |
| 12 Events | | 781 Attendees | |

PUBLICATIONS

The Hoppe-Odiorne Ranch, a Blanco County producer was featured in the February, 2016 issue of the Texas and Southwestern Cattle Raisers Association's (TSCRA) *Cattleman Magazine*.



TSCRA *Cattleman Magazine* February, 2016 cover in which LCRA Creekside Conservation Program article can be found. The full article and accompanying video is available on LCRA's public web site:

<http://www.lcra.org/community-services/land-conservation/Pages/default.aspx>

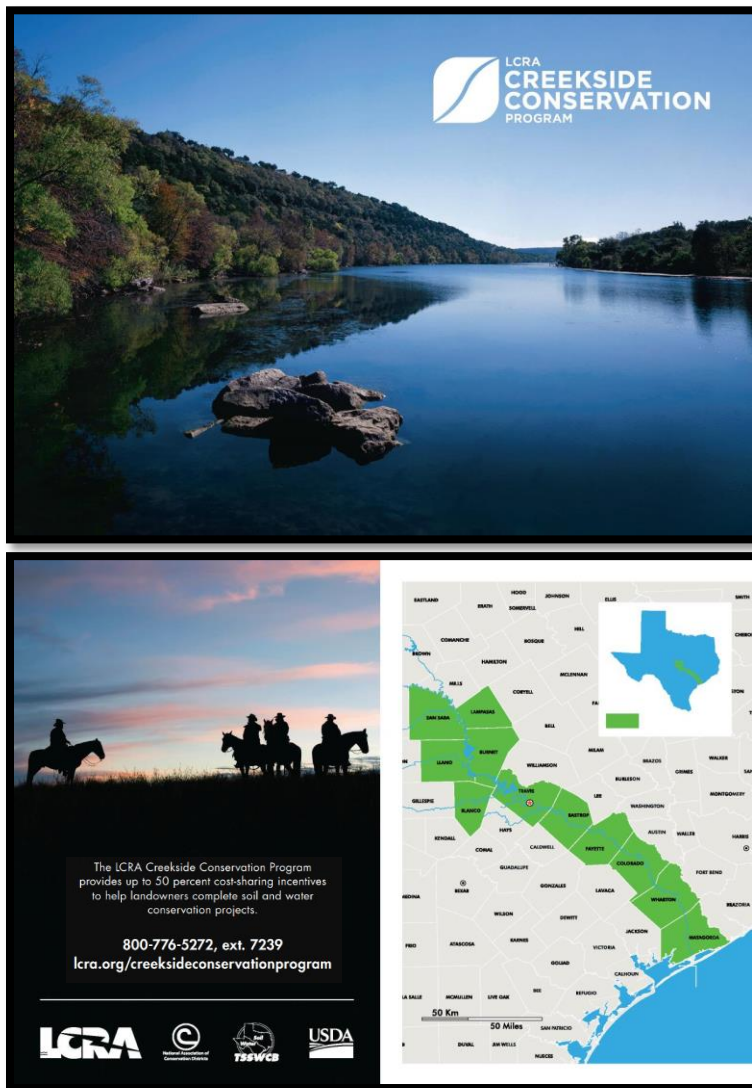
PROGRAM LOGO

LCRA produced a new logo specifically for the Creekside Conservation Program.



PROGRAM RACK CARD

LCRA produced a program rack card and made it available to the public throughout the duration of the project.



CONCLUSION

The Creekside Conservation Program began in 1990 with the goal of working cooperatively with private landowners to reduce erosion and increase water infiltration, thereby reducing sediment loads reaching LCRA-controlled reservoirs and waterways. The CWA §319(h) grant from the TSSWCB and EPA enabled LCRA to promote good land stewardship and increase the number of participating landowners throughout the Colorado River basin area of LCRA's statutory district. The grant provided a financial incentive for 39 landowners to implement soil saving best management practices, and to take a holistic, long-term approach to land management. Not only have these landowners benefited, so has the entire lower Colorado River basin through a reduction in soil erosion and pollutant load reaching receiving water bodies and the resulting improvement in water quality.

LCRA relied on its partnership with NRCS and local SWCD's for project coordination and implementation. The TSSWCB provided timely guidance and support during the project. Private landowners trusted these agencies to provide the technical expertise necessary to conduct conservation planning.

Technology transfer was vital to the success of this project. LCRA worked with local SWCDs to select landowners for feature stories that were submitted into local news publications and highlighted on LCRA's public web site. Project coordinators presented program information at various field days and workshops, and the historic Hoppe-Odiorne Ranch of Blanco County, a project participant was recognized for its conservation achievements through a feature video production and a published feature story in the Texas and Southwestern Cattle Raisers Association's Cattleman Magazine.

LCRA worked with NRCS and the TSSWCB to quantify pollutant load reduction resulting from this project. The Texas Best Management Evaluation Tool provided the advanced technology necessary to accomplish this task. Estimating erosion and pollutant load reduction rates on rangeland is a continually improving process, and this project was not only a benefit to private landowners, but to cooperating agencies joined together in an effort to improve rangeland science.