

PILOT PROJECT IMPLEMENTATION

In 1998, the Upper Colorado River Authority published a feasibility study showing water flows from the North Concho River to O. C. Fisher Reservoir decreased by 22 percent from 1960 to 1996. The study, funded by the Texas Water Development Board (TWDB), concluded that brush control could increase water flow into the reservoir and recharge aquifers at a fraction of the state's cost for water produced by other means.

TSSWCB initiated the North Concho River Pilot Brush Control Project in 1999. As of 2006, TSSWCB has contracted with 314 landowners and treated more than 300,000 acres at a cost to the state of \$13.7 million in cost-share. An additional 34,000 acres are scheduled for treatment within two years.

Many partners collaborated in the Pilot Project.

- Local SWCDs worked with landowners to develop resource management plans for more than one-half the watershed, addressing brush control, soil erosion, water quality, wildlife habitat and other natural resources issues.
- TSSWCB was able to dedicate more than 90 percent of state funds to on-the-ground practices with the help of local SWCDs and USDA–Natural Resources Conservation Service (NRCS).
- Texas Department of Criminal Justice inmates completed brush control on 17,000 acres.
- Appropriated state funds leveraged an additional \$8.1 million.
 - \$4.1 million from landowners
 - \$4 million from NCRS for management practices
- Texas Parks and Wildlife Department assisted by providing guidance to landowners on wildlife concerns.



Sterling Creek, once dried, is a perennial flowing creek after brush control. (May 2005)

TEXAS BRUSH CONTROL PROGRAM

The Texas Brush Control Program, a voluntary cost-share program under the leadership of the Texas State Soil and Water Conservation Board (TSSWCB) and local Soil and Water Conservation Districts (SWCDs), is designed to enhance water availability by removing water-consuming brush, such as mesquite and juniper, in Texas watersheds with critical water needs.

TSSWCB initiated the North Concho River Pilot Brush Control Project after a feasibility study found that brush control could increase water flow of the North Concho River to O. C. Fisher Reservoir — the water supply source for San Angelo.

The Pilot Project has successfully concluded with the brush control providing water yield benefits as well as other environmental benefits. Brush control in other watersheds is on-going.

PROJECT PARTNERS

The North Concho River Pilot Brush Control Project was successful because of the following collaborators:

- Texas State Soil and Water Conservation Board
- Coke County SWCD
- Glasscock County SWCD
- North Concho River SWCD
- Tom Green SWCD
- Upper Colorado River Authority
- City of San Angelo
- Texas Agricultural Experiment Station
- Texas Cooperative Extension
- Texas Commission on Environmental Quality
- Texas Department of Criminal Justice
- Texas Institute for Applied Environmental Research
- Texas Parks and Wildlife Department
- Texas Water Resources Institute
- Texas Water Development Board
- USDA–Natural Resources Conservation Service
- U.S. Environmental Protection Agency

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NORTH CONCHO RIVER PILOT BRUSH CONTROL PROJECT



West Fork of Grape Creek without brush control (August 2005)



East Fork of Grape Creek with brush control (August 2005)

CONSERVING WATER THROUGH BRUSH CONTROL

WATER RESOURCES BENEFITS

After at least five years of severe drought, normal to above normal rainfall returned to the North Concho River watershed from 2003-2005 (Figure 1). A recent Upper Colorado River Authority (UCRA) report showed a number of encouraging hydrologic improvements.

- **Initial estimates of the cost-effectiveness of brush control are promising.**
 - In 2005, UCRA estimated almost 1,900 acre-feet of water yield on the East Fork of Grape Creek, which had 18,270 acres treated. In contrast, the untreated West Fork of Grape Creek, remained dry.
 - Assuming flows continue at current levels for the next 10 years, the cost of this water is 58 per acre-foot, comparable to the \$53 per acre-foot estimated in the North Concho River's feasibility study developed by UCRA, Texas Agricultural Experiment Station, and TSSWCB for the Texas Water Development Board. This cost is considerably less than estimated costs of \$160 per acre-foot for moving water from nearby lakes.

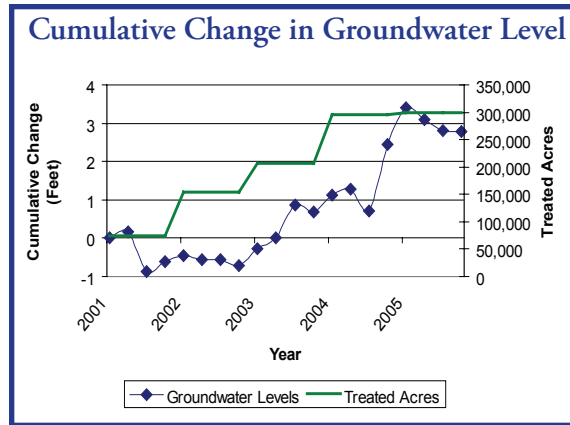


Figure 2. Regional groundwater levels are increasing in the North Concho River watershed based on monitoring of 40 wells.

- **Perennial flows were returned to portions of the North Concho and its tributaries in 2005.**
 - UCRA observed perennial flow return on 40 miles of Sterling Creek (Figure 1), East Fork of Grape Creek and the North Concho River in 2005, allowing re-establishment of aquatic communities and increasing storm flows to O. C. Fisher Reservoir.
- **Regional groundwater levels are rising.**
 - Groundwater levels measured by UCRA in the North Concho region rose by an average of 3 feet since 2003, based on monitoring 40 wells (Figure 2).
 - Long dry, regional springs and seeps are returning and restoring perennial stream flows.
- **Reductions in evapotranspiration from mesquite control documented.**
 - Measurements in the watershed by the Texas Institute for Applied Environmental Research showed a 5 percent decrease in annual total evapotranspiration rates following treatment of mesquite.

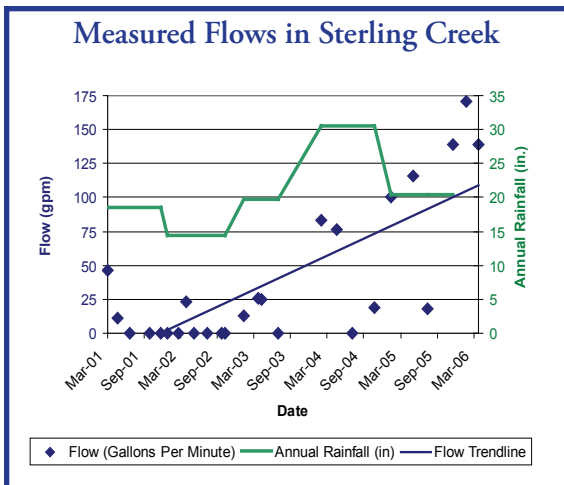


Figure 1. Noticeable increases in flows in Sterling Creek

- This reduction is equivalent to 17,420 gallons of water for every acre treated—almost a months supply of water for a family of four in San Angelo.
- A similar evaluation of water yields from control of juniper is on-going.

LESSONS LEARNED

The North Concho River Pilot Brush Control Project was just that – a pilot project. As such, TSSWCB adapted the project to respond to the arising challenges and issues.

For future projects, TSSWCB recommends:

- Continuing development of feasibility studies on sub-basin basis.
- Targeting brush control funds to sub-basins prioritized by high landowner participation, water yield and cost effectiveness.



Sterling Creek, after brush control. (February 2000)

- Providing incentives to encourage implementation of long-term resource management plans.
- Monitoring brush control areas to document results and ensure continued success.
- Using state funds to leverage other funds.

The lessons learned in the Pilot Project have resulted in the program's successful implementation in subsequent watersheds.

FUTURE PLANS

Future plans for the Brush Control Program include:

- Completing on-going projects.
- Collaborating with regional water planning boards and others to identify additional areas throughout the state to implement brush control as a best management practice to yield more water.
- Continuing to verify the impacts of the program.
- Working to find additional sources of monies.
- Beginning follow-up brush control on previously cleared land to maintain water savings.

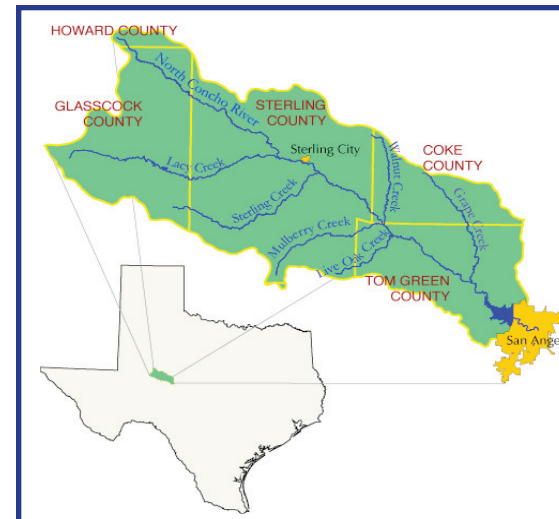


Figure 3. North Concho River was the first watershed treated in the Texas Brush Control Program.