Texas State Soil & Water Conservation Board

Brush Control Program

2002 Annual Report

January 1, 2002 - December 31, 2002

Program Goal

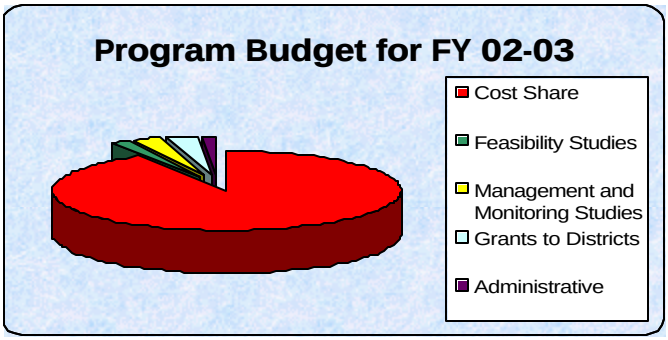
Enhance water conservation through selective brush control.

2002 Activities At A Glance

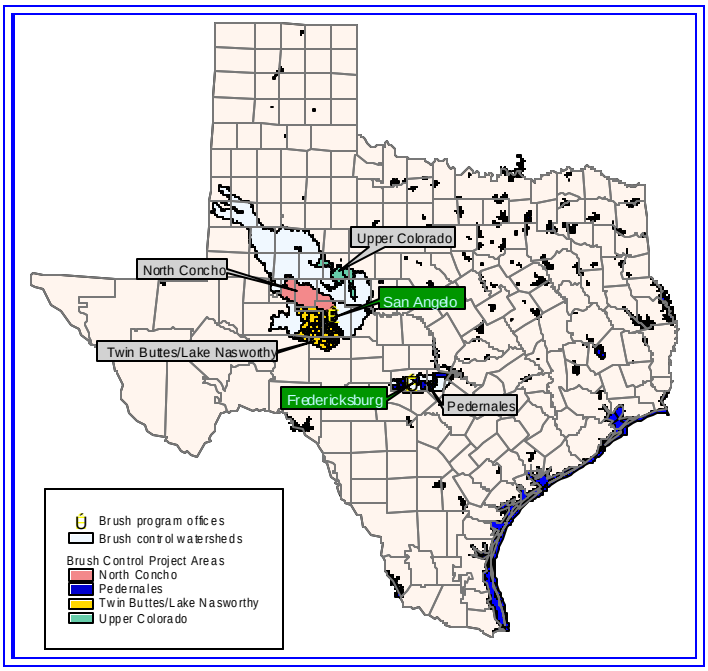
- Brush Controlled on 106,000 Acres
- 6 Projects Initiated
- 4 Feasibility Studies Completed
- Brush Control Rules Revised
- Reference Guide Completed
- 7 Special Studies Completed

Program Budget

FY 00-01 $9,163,000 General Revenue
FY 02-03 $9,163,000 General Revenue
$15,000,000 Agricultural Water Conservation Bond



Introduction



Map of Ongoing Brush Control Projects

This annual report covers the 2002 calendar year. Data from other years is included in a few cases to show trends.

All implementation projects included in this report, except the North Concho River Brush Control Project, were initiated by the Texas State Soil & Water Conservation Board (TSSWCB) and local Soil and Water Conservation Districts utilizing the $15 million Agricultural Water Conservation Bond funding appropriated by the 77th Legislature.

The North Concho River Brush Control Project, as well as the studies conducted, were funded utilizing General Revenue appropriated by the Legislature. The following pages highlight our annual activities.

It is estimated that at least 24,000 acre-feet of water was conserved last year from the treatment of mesquite in the North Concho.

North Concho River Pilot Brush Control Project

In 1999, the 76th Legislature initiated the North Concho River Brush Control Project to enhance the amount of water flowing from the North Concho River watershed into O.C. Fisher Reservoir. In 2001, this project was continued by the 77th Legislature.

With 325,000 acres of the 950,000-acre North Concho River watershed currently targeted for brush control by the TSSWCB (see chart below), West Texans have focused their undivided attention to the progress of this project. Estimates indicate this project will conserve more than 166,000 acre-feet of water in the O.C. Fisher Reservoir watershed over the life of the project. O.C. Fisher Reservoir is a water supply for the city of San Angelo where water levels have fallen to critical levels (currently 3 percent of capacity).

Over half of the 307,000 acres of brush under contract have been treated to date using state funds. Prison inmates have cleared an additional 17,000 acres to date (13,000 acres in 2001 and 4,000 acres in 2002). However, the current drought in West Texas continues to present major challenges to the brush control program. Due to lack of rainfall and insect damage, the mesquite has not been suitable for chemical treatment. As a result only 31,000 acres have been treated thus far through aerial application of chemicals. This in turn has limited a majority of the brush removal activities to mechanical treatment (power grubbing, dozing, etc.) and has scattered brush removal efforts throughout the watershed.

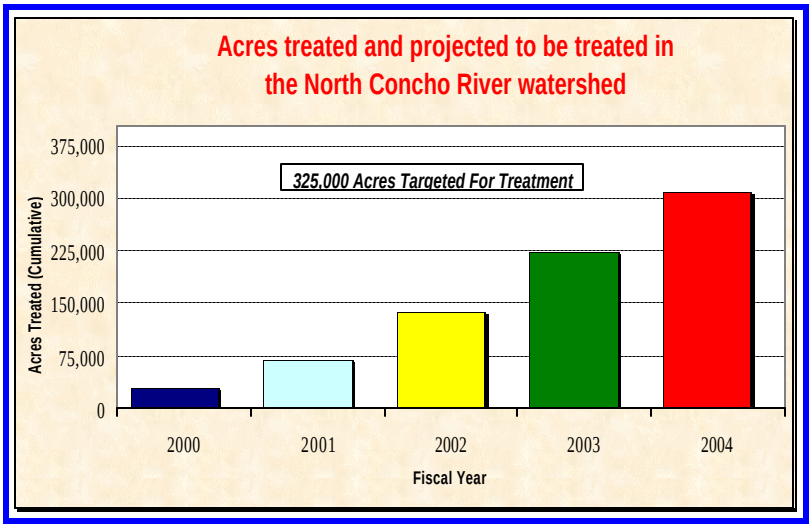
The Upper Colorado River Authority (UCRA), under contract with the TSSWCB, is continuing to monitor hydrologic responses in the watershed to brush removal. Basin-wide responses have been difficult to monitor due to the depleted condition of the shallow alluvial aquifer prior to brush control efforts, the fact that half of the contracted acreage has yet to be treated, and the fact that the area has been experiencing a drought since 1998.

O.C. Fisher Reservoir is a water supply for the city of San Angelo where water levels have fallen to dangerously low capacities.

As a result, the UCRA has focused on sub-basin and small area responses for early indications of benefits.

Through brush control, the restoration of the North Concho River is ongoing and the following effects have been observed thus far:

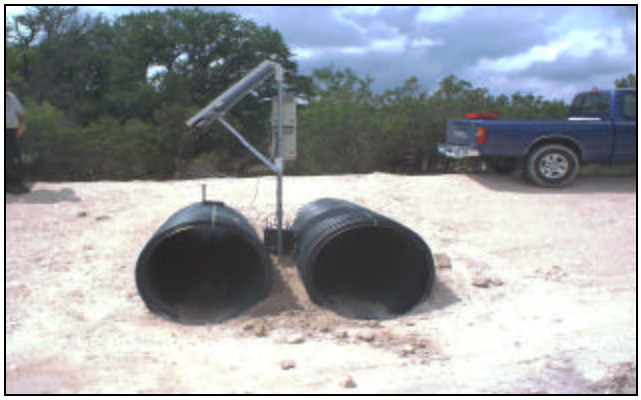
- Areas where brush control work has been concentrated thus far (Chalk Creek, Grape Creek, and Sterling Creek) exhibit more frequent runoff events of greater intensity and duration than other tributaries along the North Concho River.
- Field observations of the North Concho River indicate that flow responses to rainfall are more frequent and pools hold water for longer periods of time following rainfall events. The first storm water runoff event to occur in the month of July in 40 years occurred in July 2002. Prior to 1961, July storm water runoff events were common.
- Following aerial treatment of mesquite, a pronounced increase in soil moisture and decrease in evapotranspiration was observed. Based on preliminary data analysis, it is estimated that at least 24,000 acre-feet of water was conserved last year from the treatment of mesquite in the North Concho. Conservation of water from the treatment of juniper would be in addition to this.



Twin Buttes Reservoir/Lake Nasworthy Brush Control Projects

In September 2002, three brush control projects were initiated to enhance the amount of water flowing into the Twin Buttes Reservoir/Lake Nasworthy complex. Twin Buttes Reservoir is used to maintain sufficient water levels in Lake Nasworthy, which serves as a water supply for the city of San Angelo. Lake Nasworthy also provides cooling water for a power generation plant. Water levels in Twin Buttes Reservoir have fallen to critical levels (currently 3 percent of capacity).

Based on water needs and the results of feasibility studies, the TSSWCB allocated $8.4 million for brush control cost-share for three projects in the Twin Buttes Reservoir/Lake Nasworthy watershed. It is projected that this allocation will allow the treatment of nearly 300,000 acres of brush and will result in the conservation of almost 260,000 acre-feet of water.



Increases in flow resulting from brush control are being monitored in the North Concho River watershed.

The Middle Concho River crossing at FM 853.

Additional funding will be needed to complete the treatment of the more than 555,000 acres of brush that are targeted in the 2.4 million acre watershed. Projections indicate that over the life of the project, treatment of the targeted acres will result in the conservation of almost 500,000 acre-feet of water in the Twin Buttes Reservoir/Lake Nasworthy watershed.

Landowners have submitted requests for funding to treat over 460,000 acres. To date, over 72,000 acres have been contracted for treatment in this watershed. Over 7,000 acres of brush have been treated to date using state funds.

Lake Ballinger Brush Control Project

In September 2002, the TSSWCB and local SWCDs initiated a brush control project to enhance the amount of water flowing into Lake Ballinger which lies in the Upper Colorado watershed. This lake supplies water to the city of Ballinger. Lake Ballinger is essentially dry except for water being pumped into it from the Colorado River.

Based on water needs and the results of feasibility studies, the TSSWCB allocated $500,000 for brush control cost-share in the Lake Ballinger watershed. It is projected that this allocation will allow the treatment of over 15,000 acres and conserve over 20,000 acre-feet of water over the next 10 years in the Lake Ballinger watershed.

Additional funding will be needed to complete the treatment of the 35,000 acres of brush that are targeted in the 149,000-acre watershed. Projections indicate that over the life of the Lake Ballinger project, the treatment of the targeted acres will increase water yield to Lake Ballinger by over 43,000 acre-feet.

Prescribed burning, as seen above, is a recommended follow up brush control treatment.

Landowners have submitted requests for funding to treat almost 17,000 acres. To date, over 1,000 acres have been contracted for treatment in this watershed.

Oak Creek Reservoir Brush Control Project

Based on water needs and the results of feasibility studies, the TSSWCB allocated $1 million in September 2002 for brush control cost-share in the Oak Creek Reservoir watershed. This brush control project will enhance the amount of water flowing into Oak Creek Reservoir, which supplies water for the citizens of Sweetwater, Blackwell, Bronte, and Robert Lee. The lake, which is located in the Upper Colorado critical area, also serves as a recreational site. Water levels in Oak Creek Reservoir have fallen to seriously low levels (currently 7 percent of capacity).

It is projected that the $1 million allocated to this project will allow the treatment of almost 30,000 acres in the Oak Creek Reservoir watershed. It is estimated that this will conserve an estimated 33,000 acre-feet of water over the next 10 years.

Additional funding will be needed to complete the treatment of the 60,000 acres of brush that are targeted in the 152,000-acre watershed. Projections indicate that over the life of the project, the treatment of targeted acres will result in almost a 66,000 acre-feet increase in water yield to Oak Creek Reservoir.

Vegetation is returning following brush control work.

Thus far, landowners have submitted requests for funding to treat over 27,000 acres. To date, 8,000 acres have been contracted for treatment in this watershed and over 560 acres of brush have already been treated.

Mountain Creek Reservoir Brush Control Project

In September 2002, a brush control project was initiated to enhance water yield to Mountain Creek Lake. This lake, which serves as a water supply for the city of Robert Lee, is located in the Upper Colorado watershed. In the Mountain Creek Lake watershed, over 7,500 acres of the 19,000-acre watershed have been targeted for brush control. It is anticipated that the $332,000 allocated by the TSSWCB to the project will allow the treatment of all targeted acres in the Mountain Creek Lake watershed and increase water yield to the lake by 5,500 acre-feet over the next 10 years.

Thus far, landowners have submitted requests for funding to treat almost 6,400 acres. To date, over 1,000 acres have been contracted for treatment in this watershed.

BEFORE - Mesquite before aerial spraying.

AFTER - Mesquite 2 weeks after aerial spraying.

A 10 foot mesquite tree can consume up to 20 gallons of water per day.

Champion Creek Reservoir Brush Control Project

A brush control project was initiated in September 2002 to enhance the amount of water flowing into Champion Creek Reservoir which is located in the Upper Colorado critical area. This reservoir is an important water source for the Colorado City and their service area including the city's population of approximately 5,000 citizens and over 2,000 inmates within the TDCJ system.

Bulldozers and other heavy machinery are used to effectively clear brush.

The lake also serves as an important tool in the power generation process for the TXU power plant located in Colorado City as well as a regional tourist attraction for recreational purposes. Water levels have fallen to critical levels (currently 5 percent of capacity) and are now well below the intake valves for both Colorado City and TXU.

Juniper has been documented to intercept 73% of precipitation.

Based on a proposal submitted by local soil and water conservation districts, the TSSWCB allocated $907,000 for brush control cost-share in the Champion Creek Reservoir watershed. It is projected that the funds allocated will allow the treatment of all 24,000 acres of brush targeted in the 116,000-acre watershed. Projections indicate that over the next 10 years, treatment of the targeted acres will increase water yield to Champion Creek Reservoir by almost 19,000 acre-feet.

Landowners have submitted requests for funding to treat over 20,000 acres. To date, 2,000 acres have been contracted for treatment in this watershed.

Pedernales River Brush Control Project

In September of 2002, a brush control project was initiated to enhance the amount of water flowing from the Pedernales River watershed into Lake Travis, a water supply for the city of Austin. The lake is also used for power generation and has become a major resort area providing opportunities for boating, fishing, swimming, and camping.

Based on water needs and the results of feasibility studies, the TSSWCB allocated $3.5 million for brush control cost-share in the Pedernales River watershed. It is projected that this allocation will allow the treatment of over 45,000 acres of brush in the Pedernales River watershed and will result in the conservation of an estimated 318,000 acre-feet of water over the next 10 years.

Additional funding will be needed to complete the treatment of the 140,000 acres of brush that are targeted in the 815,000-acre watershed. Projections indicate that over the life of the project, treatment of the targeted acres will result in the conservation of over 672,000 acre-feet of water in the Pedernales River watershed.

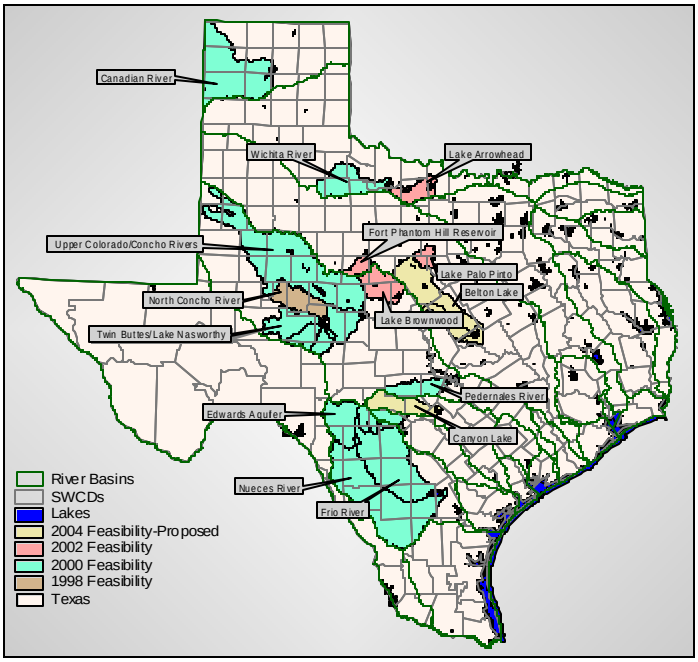
Landowners have submitted requests for funding to treat more than 55,000 acres. In 2002, almost 33,000 acres were contracted for treatment in this watershed. Over 600 acres of brush have been treated to date using state funds.

Tree shearer being used to clear blueberry juniper out from under a live oak.

FEASIBILITY STUDIES

The feasibility of using brush control to enhance water yield was studied in the Lake Arrowhead, Lake Brownwood, Lake Fort Phantom Hill, and Lake Palo Pinto watersheds (see map) using $500,000 provided by the 77th Legislature. These four brush control feasibility studies were initiated in September 2001 and were completed in November 2002. Participants in these studies included the following:

- Central Colorado SWCD
- Archer County SWCD
- Palo Pinto SWCD
- Middle Clear Fork SWCD
- Brazos River Authority
- Lower Colorado River Authority
- Red River Authority
- Texas Agricultural Experiment Station



Completed and Proposed Feasibility Studies

All the feasibility studies concluded that brush control was an feasible alternative for economically increasing water yield in all watersheds studied. The results of each feasibility study are summarized below. The final reports will be delivered to the Texas Legislature in January 2003.

Lake	Water User	Watershed Acres	Brush Acres	Expected Yield (ac-ft)	Cost/ Ac-Ft	Project Cost
Arrowhead	Wichita Falls	529,354	277,657	1,182,913	$14.83	$17,545,832
Brownwood	Brownwood	997,039	462,141	1,410,407	$35.41	$49,948,385
Fort Phantom Hill	Abilene	301,118	138,396	346,010	$29.45	$10,189,418
Palo Pinto	Mineral Wells	296,400	139,425	595,023	$24.09	$14,332,240

OTHER ACTIVITIES

The 77th Legislature provided $500,000 to study methods for adequately addressing future maintenance needs, identifying appropriate watershed management activities, and identifying financing mechanisms for the State Brush Control Program. The UCRA, under contract with the TSSWCB, headed up these studies. The UCRA worked with the Texas Institute for Applied Environmental Research to determine the effects of brush control on the water balance and water yield within the North Concho watershed. Ecological Restoration and Management Consultants assisted the UCRA with researching maintenance needs and watershed management. The UCRA contracted Freese & Nichols, Inc. to research future financing options for the State Brush Control Program.

Seven reports were completed and are being reviewed by the TSSWCB:

1. *Alternative Management Strategies for Meeting the Spirit of the Texas Brush Control Law and How Alternative Strategies May Affect Landowner Participation and Societal Benefits.*
2. *Alternative Mechanisms for Implementing and Administering Maintenance Control Programs for Mesquite and Redberry Juniper, Including Considerations of Incentive-Driven vs. Mandatory Driven Programs and A Review of Other Cost-Share Programs for Maintenance Brush Control that May Be Used in Lieu of or to Supplement Funds Available From the Texas Brush Control Program.*

3. *Recommendations for Consideration in Future Rule Making Activities Related to the Texas Brush Control Program by the Texas State Soil and Water Conservation Board.*
4. *Field Inspections of Mesquite and Redberry Juniper Control Treatments Used in the North Concho River Watershed Brush Control Project.*
5. *Guidelines to Assure that Aerial Spraying of Mesquite is According to Program Specifications and an Acceptable Level of Mesquite Mortality is Achieved.*
6. *Evaluation of Future Financing Alternatives for the State Brush Control Program.*
7. *Identification of Alternative Practices for Maintenance Control of Mesquite and Redberry Juniper and an Assessment of Their Strengths and Weaknesses.*

The TSSWCB also developed the *Brush Control Program Reference Guide* to provide guidance for Soil and Water Conservation Districts involved in the program.

UNTREATED area of Sterling Creek.

TREATED area of Sterling Creek.

BRUSH CONTROL RULES REVISION

In response to Internal Audit Recommendations received in April 2002, amendments to the brush control rules were proposed to the TSSWCB in May 2002 and published in the July 5, 2002 Texas Register. Upon receiving numerous requests for a public hearing, four public hearings were held to discuss the proposed rule amendments. As a result of comments received, the TSSWCB withdrew the amendments proposed in May 2002 and directed staff to draft new brush control rules.

As directed by the TSSWCB, staff drafted proposed brush control rules that addressed comments, complied with the Brush Control Law (§203 of the Agriculture Code) and provided for local involvement in the administration of the Brush Control Program to the maximum extent possible. To develop these rules, staff integrated the law, existing rules, existing policies and procedures, the State Brush Control Plan, and input from local Soil and Water Conservation Districts, Texas Parks and Wildlife Department, USDA Natural Resources Conservation Service, Texas Department of Agriculture, Office of the Attorney General, Texas A&M University, Texas Farm Bureau, Upper Colorado River Authority, TSSWCB staff, and Association of Texas Soil and Water Conservation Districts staff.

Primary changes included the addition of several new sections, procedures for allocation of funding to critical areas, and clarification of the roles and duties of soil and water conservation districts (SWCDs), which includes the establishment of critical area working groups.

In November 2002, the TSSWCB approved the proposed brush control rules for submission to the Texas Register for a 30-day public comment period. The proposed brush control rules were published in the December 6, 2002 Texas Register. Following a public hearing on January 16, 2003, the TSSWCB adopted the brush control rules with minor modifications resulting from public comments received.

An acre foot (about 326,000 gallons) can meet the annual water needs of one to two US households.

PROJECT SUMMARY

Lake	Total brush (ac)	Brush targeted (ac)	Expected yield (ac-ft) from target ac	FY00-03 funding	Expected ac to be treated	Expected yield (ac-ft) from FY00-03 ac	$ needed to complete project
O.C. Fisher	437,880	325,000	166,000	$13,026,000	307,000	157,000	$763,000
Twin Buttes / Nasworthy	923,792	555,000	493,000	$8,404,000	291,000	259,000	$7,619,000
Ballinger	54,485	35,000	43,000	$500,000	15,000	20,000	$653,000
Oak Creek	96,616	60,000	66,000	$1,000,000	30,000	33,000	$1,014,000
Champion Cr.	40,347	24,000	19,000	$907,000	24,000	19,000	$0
Mountain Cr.	10,458	7,500	5,500	$332,000	7,500	6,000	$0
Pedernales	228,405	140,000	672,000	$3,510,000	45,000	318,000	$7,340,000
Totals	1,791,983	1,146,500	1,464,500	$27,679,000	719,500	812,000	$17,389,000

LEGISLATIVE APPROPRIATIONS REQUEST

Included in the FY04-05 Legislative Appropriations Request for Strategy A.1.2. Brush Control Assistance, is $9,163,189 out of the General Revenue Fund. Out of the total appropriations for brush control, $275,000 for the biennium is being requested to be spent on brush control feasibility studies in the Lake Belton and Canyon Lake watersheds.

A total of $8,888,189 for the biennium is requested to be used for continuing existing brush control projects and for implementing projects supported by published feasibility studies and designated by the State Board for implementation.

In addition to the amounts requested above, any unexpended balances associated with the brush control program funded through General Revenue as of August 31, 2003, are requested to be appropriated for the same purposes for the fiscal year beginning September 1, 2003.

Also included in the amount requested is the balance of funds not expended through the Interagency Agreement with the Texas Water Development Board and the Texas State Soil and Water Conservation Board for the 2002-2003 biennium. The balance of the funds as of August 31, 2003 is requested to be granted to the Texas State Soil and Water Conservation Board effective September 1, 2003 to be used for brush control cost-share projects.

Finally, included in the appropriations request is $15,000,000 to be granted to the Texas State Soil and Water Conservation Board from proceeds received from the sale of Agricultural Water Conservation Bonds in the amount of $15,000,000 for the 2004-2005 biennium.

A total of $15,000,000 is to be used for continuing existing brush control projects and for implementing new projects supported by published feasibility studies and designated by the State Board for implementation. These funds are requested to be made available through a grant to the Texas State Soil and Water Conservation Board no later than November 2003 for brush control cost-share projects.

For more information, visit TSSWCB's website at http://www.tsswcb.state.tx.us/programs/brush.html or contact Kevin Wagner at 254-773-2250 Ext. 238 or kwagner@tsswcb.state.tx.us.