



# TEXAS STATE SOIL AND WATER CONSERVATION BOARD WATER SUPPLY ENHANCEMENT PROGRAM

**2016 ANNUAL REPORT**  
JANUARY 1, 2016 – DECEMBER 31, 2016

## *Meeting Critical Water Conservation Needs and Enhancing Public Water Supplies Through Brush Control*

### PROGRAM FRAMEWORK

Scarcity and competition for water have made sound water planning and management increasingly important. The demand for water in Texas is expected to increase by over 17%, to a demand of about 21.6 million acre-feet in 2070; while existing water supplies are projected to decrease by nearly 11%, to about 13.6 million acre-feet (2017 State Water Plan).

Over at least the last century, rangeland vegetation in the United States has undergone a large-scale conversion from grasslands to woodlands. Noxious brush, detrimental to water conservation, has invaded millions of acres of rangeland and riparian areas in Texas, reducing or eliminating stream flow and aquifer recharge through interception of rainfall and increased evapotranspiration. Brush control has the potential to enhance water yield by conserving water lost to evapotranspiration, recharge groundwater and aquifers, enhance spring and stream flows, restore native wildlife habitat by improving rangeland condition, improve livestock grazing distribution, and aid in wildfire suppression by reducing hazardous fuels.

<u>PROGRAM BUDGET</u>	
FY2016	\$2,638,413 General Revenue
FY2017	\$2,638,413 General Revenue

In order to help meet the State’s critical water conservation needs and ensure availability of public water supplies, the Texas Legislature, in 2011, established the Water Supply



Enhancement Program (WSEP) administered by the Texas State Soil and Water Conservation Board (TSSWCB). The purpose of the WSEP is to increase available surface and ground water supplies through the targeted control of brush species that are detrimental to water conservation.

The TSSWCB collaborates with other entities to identify watersheds across the state where it is feasible to implement brush control in order to enhance public water supplies. WSEP funds may only be allocated to projects that have a completed feasibility study that includes a watershed-specific computer model. The TSSWCB uses a competitive grant process to rank feasible projects and allocate WSEP funds, giving priority to projects that balance the most critical water conservation need of municipal water user groups with the highest projected water yield from brush control.

In watersheds where WSEP funds have been allocated, the TSSWCB works through soil and water conservation districts (SWCDs) to deliver technical assistance to landowners in order to implement brush control activities. A 10-year resource management plan is developed for each property enrolled in the WSEP which describes the brush control activities to be implemented, follow-up treatment requirements, brush density to be maintained after treatment, and supporting practices to be implemented including livestock grazing management, wildlife habitat management, and erosion control measures. Financial incentives are provided through the WSEP to landowners implementing brush control activities on eligible acres consistent with their resource management plan.

In accordance with Agriculture Code §203.056, the TSSWCB publishes this statutorily-required *WSEP Annual Report* which serves as a comprehensive analysis of the program's effectiveness during the preceding calendar year. This *Annual Report* documents program results, assesses the program, reports on program participant compliance with resource management plans, and reports overall projected water yield enhanced.

More information on the WSEP is available at <http://www.tsswcb.texas.gov/brushcontrol/>.

## **2016 ACTIVITIES AT A GLANCE**

### **Legislature, Sunset, and Appropriations**

Since the 82<sup>nd</sup> Texas Legislature enacted H.B. 1808 in 2011, the agency has continued to diligently take steps to implement the statutorily-required program modifications. In January 2015, the Sunset Advisory Commission concluded that all provisions of H.B. 1808 related to the WSEP have been fully implemented.

On June 20, 2016, the Texas State Senate Committee on Agriculture, Water, and Rural Affairs held a public hearing relating to the Committee's interim charge to make recommendations on improving the process of developing and executing the *State Water Plan*. Invited testimony was provided on voluntary land stewardship, agricultural water conservation, brush management, and the WSEP.

The agency's Legislative Appropriation Request (LAR) for the 2018-2019 biennium was submitted to the Legislative Budget Board (LBB) in August 2016. As directed by the Governor and the LBB, the agency trimmed 4% from the overall base appropriation request, which translated to a 5.67% reduction in requested WSEP funding. The LAR does include an exceptional item request to restore the 4% base reduction.

In June 2016, the TSSWCB *Strategic Plan for Fiscal Years 2017 to 2021* was submitted to the LBB. The *Strategic Plan* includes a section that identifies barriers to the agency in achieving its core mission and makes recommendations to the Legislature on how to overcome these barriers. The *Strategic Plan* identifies four significant impediments to success for the WSEP which merit legislative review, one of which is that the WSEP is not substantially funded to achieve significant water conservation. Economic analysis, included in 20 published brush

control feasibility studies, estimates that the total capital cost (i.e., the State's cost-share) for full implementation of brush control is over \$1.18 billion. For FY2000-2017, the TSSWCB was appropriated \$68.06 million to implement the WSEP, and its predecessor the Brush Control Program; this is only 5.8% of needed funds as estimated in the feasibility studies. Increased appropriations by the Texas Legislature would allow the TSSWCB to more substantially implement the WSEP, potentially conserving up to 2.41 million acre-feet of water per year from brush control.

## State Water Supply Enhancement Plan



In accordance with Agriculture Code §203.051, the State Board must adopt the *State Water Supply Enhancement Plan*. The *State Water Supply Enhancement Plan* serves as the State's comprehensive strategy for managing brush in all areas of the state where brush is contributing to a substantial water conservation problem and also serves as the programmatic guidance for the agency's WSEP.

After an extensive and inclusive public comment process during summer 2014, the State Board adopted the *State Water Supply Enhancement Plan* on July 28, 2014. The *State Plan* documents the goals, processes, and results the agency has established for the WSEP. The *State Plan* discusses in detail all of the changes made to the program as a result of H.B. 1808. The *State Plan* is a "living" document and must be reviewed at least every two years.

In order to provide recommendations to the agency on implementing statutory changes to the WSEP and guide the decisions of the State Board, the TSSWCB established a WSEP Stakeholder Committee of program beneficiaries and a WSEP Science Advisory Committee of technical experts. On April 27, 2016, the TSSWCB hosted a WSEP Science Advisory Committee meeting in Austin.

The *State Water Supply Enhancement Plan* was last approved in July 2014 and must now be updated and revised in order to continue implementing statutory requirements. On December 2, 2016, notice of the availability, for public review and comment, of the proposed revision to the *State Water Supply Enhancement Plan* was published in the *Texas Register*. The TSSWCB is accepting written comments on the proposed document through January 9, 2017. In accordance with statute, the proposed revision will be discussed at a public hearing scheduled for January 5, 2017. After the public hearing and comment period, the TSSWCB will address comments received and incorporate them into a final *State Water Supply Enhancement Plan* document that will be considered for adoption by the State Board in January 2017.

## Feasibility Studies

In accordance with Agriculture Code §203.053(b), for a watershed to be considered eligible for allocation of WSEP cost-share incentive funds, a brush control feasibility study that includes a watershed-specific computer model must be completed and must demonstrate increases in projected post-treatment water yield.

Since 1998, the TSSWCB has collaborated with many partnering entities to conduct assessments of the feasibility of conducting brush control for water supply enhancement in watersheds across the state. Feasibility studies have been conducted and published for 24 watersheds; these reports have been accepted by the TSSWCB and the studied areas have been designated as priority WSEP Project Watersheds.

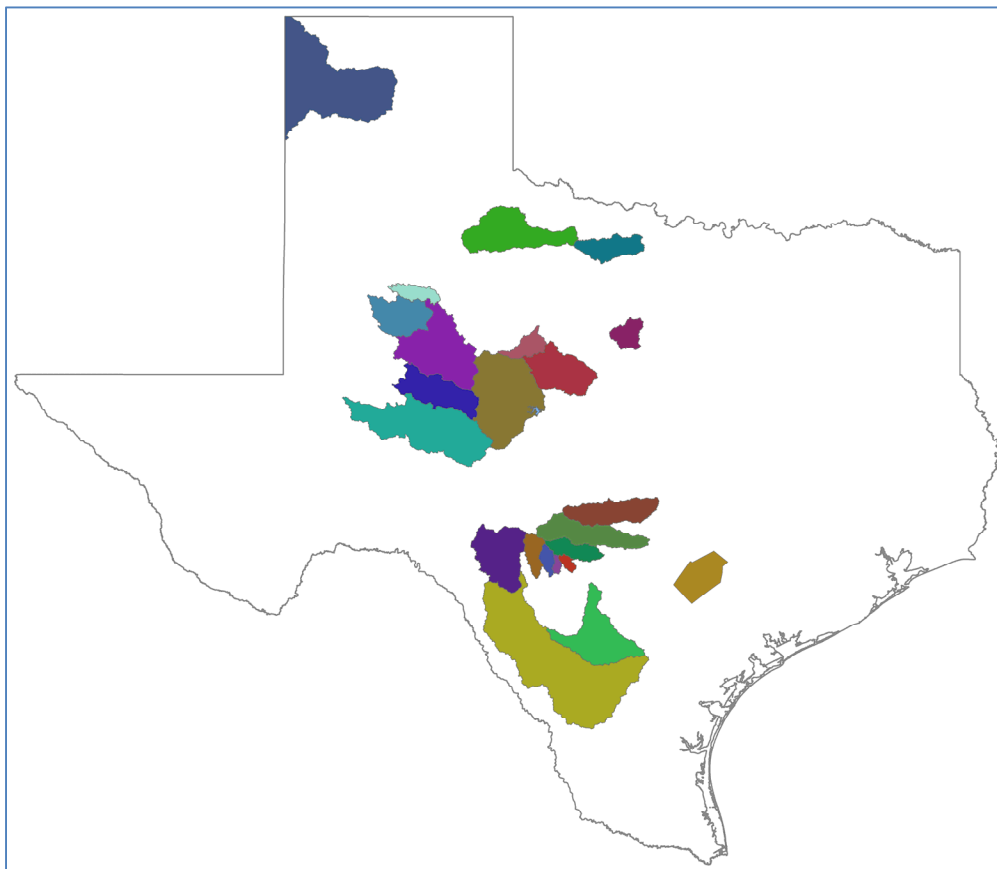


Figure 1. Approved WSEP Project Watersheds.

Utilizing WSEP funds, the TSSWCB has contracted with several entities to perform computer modeling for feasibility studies to project water yield increases from brush control in several watersheds. Work has continued in 2016 by partnering entities on these in-progress feasibility studies. Texas Tech University, in collaboration with the Texas A&M Water Resources Institute, is developing a brush control feasibility study for the North and South Llano Rivers in Kimble, Edwards, and Sutton counties. And, Texas Tech University, in collaboration with the San Antonio River Authority, is developing brush control feasibility studies for watersheds in Goliad, Karnes, Refugio, Victoria, and Wilson counties.

On August 4, 2016, the TSSWCB accepted the brush control feasibility study for Lake Alan Henry (published as *Simulation of Streamflow and the Effects of Brush Management on Water Yields in the Double Mountain Fork Brazos River Watershed* by the U.S. Geological Survey) and established the studied watershed as a priority WSEP Project Watershed. Utilizing WSEP grant funds, the U.S. Geological Survey, in cooperation with the City of Lubbock, developed a computer model of the Double Mountain Fork Brazos River watershed to evaluate the effects of brush management on water yields to Lake Alan Henry. Lake Alan Henry is owned and operated by the City of Lubbock and is considered a primary municipal drinking water supply. The contributing area to the lake is about 395 mi<sup>2</sup> primarily in Garza County, but extending into Borden, Kent, Lynn, and Scurry counties. After replacement of brush with grassland, the model projects that water yields to Lake Alan Henry would be enhanced by 5,700 acre-feet per year.

## Project Allocations and Request for Proposals

Throughout the year, WSEP staff worked with project sponsors to assess unobligated funds from the FY2016 project cost-share allocations (approved by the State Board on November 19, 2015) in order for the State Board to consider reallocation of those funds to other projects. Ultimately, the State Board allocated \$1,777,000 in FY2016 cost-share incentive funds to 11 WSEP projects; all unobligated FY2016 cost-share incentive funds were advanced to FY2017.

On May 26, 2016, the TSSWCB issued a request for proposals (RFP) for projects seeking funding in FY2017 to conduct brush control under the WSEP; the RFP closed on July 18, 2016. The TSSWCB received 23 proposals requesting a total of \$5,207,164 in cost-share incentive funds. Additionally, 6 on-going projects that were initiated in FY2016 have requested an additional \$731,690 in FY2017 funds. A competitive proposal review process (per 31 TAC §517.25) was used so that the most appropriate and effective projects were identified for funding. Proposed projects were evaluated giving priority to projects that balance the most critical water conservation need of municipal water user groups with the highest projected water yield from brush control.

On August 4, 2016, the State Board approved an operating budget for FY2017 that allocated \$1,777,000 in cost-share incentive funds for the WSEP. Based on appropriated funds, the TSSWCB will only be able to meet 30% of the demand for cost-share incentive funding to perform brush control as requested for the projects received during the FY2017 RFP, leaving an unmet demand for nearly \$4.2 million in cost-share incentive funding for that year.

On November 17, 2016, the State Board allocated \$700,360 in FY2017 cost-share incentive funds to 5 on-going WSEP projects that were initiated in FY2016:

- Edwards Aquifer Recharge Zone – Nueces River
- Lake Kemp
- Nimitz Lake (Upper Guadalupe River)
- Lake Travis (Pedernales River) (2 subbasins)

All remaining FY2017 cost-share incentive funds for the WSEP will be fully allocated by the State Board in January 2017.



## Conservation Planning and Program Outreach

Throughout the year, WSEP staff assisted SWCDs and conservation planners with implementation of the program in project watersheds, and worked with landowners to develop cost-share contracts for FY2016 funds and conduct performance certifications on completed brush control activities.



Throughout the year, WSEP staff participated in a variety of meetings in order to communicate and exchange ideas regarding the WSEP. Agency staff discussed WSEP activities, accomplishments, and challenges with the Texas Groundwater Protection Committee (TGPC), the TGPC Public Outreach and Education Subcommittee, the Texas Parks and Wildlife Department, the Bureau of Economic

Geology, the City of San Marcos, the U.S. Geological Survey, the San Antonio River Authority, the Victoria County Groundwater Conservation District, the Upper Trinity Groundwater Conservation District, and the Water Conservation Advisory Council Agricultural Work Group; and at the 69<sup>th</sup> Annual Society for Range Management Meeting, the Guadalupe Basin Coalition's Hill Country Water Summit, the Texas and Southwestern Cattle Raisers Association Annual Convention, the Texas Wildlife Association's 3<sup>rd</sup> Annual Private Lands Summit, and the Texas Section Society for Range Management Annual Meeting.

The TSSWCB is working with the Texas Water Development Board (TWDB) to develop the report *An Assessment of Water Conservation in Texas – Report to the 85<sup>th</sup> Legislature* as a supplement to the *2017 State Water Plan*. The joint report is required by Water Code §16.022 and must include, among other topics, an analysis of programmatic approaches and funding for additional water conservation efforts, and an assessment of existing statutory authority and whether changes are needed to more effectively promote and fund water conservation projects. The WSEP is highlighted in the *Report*, which is scheduled for completion in January 2017.

In July 2016, the TSSWCB published a feature story, *Land Stewardship Practices Rejuvenate Dormant Spring on Comal County Ranch*, which highlights a landowner who used WSEP cost-share incentive funding to enhance groundwater recharge and restore spring flow.

An article on the WSEP was published by the Texas and Southwestern Cattle Raisers Association in the November 2016 issue of *The Cattleman*. The article, *Water for Brownwood*, highlights the Lake Brownwood water supply enhancement project, landowner participation in the program, and an example of where brush management has resulted in restored in spring flow.

## Regional Water Planning Groups and the State Water Plan

Agriculture Code §203.053 requires that, in prioritizing WSEP projects for funding, the TSSWCB must consider the need for conservation of water resources within the territory of a proposed project, based on the *State Water Plan* as adopted by the TWDB. The TSSWCB also considers whether or not a regional water planning group (RWPG) has identified brush control as a recommended water management strategy in the *State Water Plan*.

TSSWCB staff worked with many of the 16 RWPGs, and the TWDB, to ensure the RWPGs were aware of the changes to the WSEP as they developed their *2016 Regional Water Plans* and the *2017 State Water Plan*. Since 2013, agency staff has made presentations on the WSEP to 9 of the 16 RWPGs.

On May 19, 2016, the TWDB adopted the *2017 State Water Plan* (published in December 2016). Brush control and voluntary land stewardship are included as recommended water management strategies by several RWPGs.

Five RWPGs (F, G, J, K, and M) recommended brush control as a water management strategy with quantified water yields in the *2017 State Water Plan*. Throughout the *2017 State Water Plan*, these brush control strategies are included in the “Other Strategies” category. The *2017 State Water Plan* includes 32 recommended water management strategies for brush control. By the 2070 planning horizon, together these brush control strategies contribute 9,656 acre-feet per year to the total supply volume from all recommended water management strategies in the *2017 State Water Plan*.

Four RWPGs (A, B, C, and O) recommended brush control as a water management strategy, but with no quantified water yields. These strategies are not reflected in the *2017 State Water Plan*; rather, these strategies are only included in each respective *Regional Water Plan*. Nine RWPGs (A, B, F, G, J, K, L, M, and O) included policy recommendations regarding brush control in their respective *Regional Water Plan*; however, in this iteration of the *State Water Plan*, the TWDB did not aggregate policy recommendations from the RWPGs. Three RWPGs (D, I, and N) determined that brush control was not a feasible strategy for their region due to a variety of reasons, while three other RWPGs (E, H, and P) did not discuss brush control at all in their plans.

Brush control for water supply enhancement is one of the more cost-effective water management strategies. During FY2014-2016, through the WSEP, 70,614 acres of brush management was incentivized by the State. For these acres, landowners received cost-share incentive funding through the program totaling \$3,487,911 in state funding. Based upon the computer models used in the feasibility studies, this work is projected to enhance public water supplies by 21,559.5 acre-feet per year, at an average cost of \$161.78 per acre-foot of water.

In December 2016, the Water Conservation Advisory Council (WCAC) published *Progress Made in Water Conservation in Texas: Report and Recommendations to the 85<sup>th</sup> Texas Legislature*. In this statutorily-required report, the WCAC recommends that the 85<sup>th</sup> Legislature consider adding the TSSWCB as a required non-voting member of each RWPG. This would strengthen the

relationship between land stewardship programs administered by the TSSWCB (i.e., the WSEP) with State policy in the Water Code and would support better integration of TSSWCB programs into the *State Water Plan*.

## STATUS REVIEWS CONDUCTED IN FY2016

Cost-share agreements between the TSSWCB and landowners contain a commitment on the part of the landowner, at no cost to the State, to maintain areas for which cost-share incentive funding for brush control was received for a period of ten years after the initial brush control is accomplished. Maintenance includes periodically re-treating the area with appropriate brush control methods to prevent brush reinfestation over the duration of the 10-year contract period.

The *State Water Supply Enhancement Plan* lays out the general schedule for follow-up brush treatment, which is detailed in each landowner's resource management plan:

- mesquite, mixed brush, saltcedar: follow-up treatment scheduled 3 years after initial treatment, if canopy (target species only) is above 5%
- juniper: follow-up treatment scheduled 8 years after initial treatment, if canopy (target species only) is above 5%

The TSSWCB is statutorily required to periodically perform status reviews of cost-share contracts to verify compliance with follow-up treatment requirements over the course of the 10-year contract period.

The *State Water Supply Enhancement Plan* describes the general schedule for status reviews:

- first status review conducted within 3-5 years after initial treatment of brush
- second status review performed 8-9 years after initial treatment



During FY2016, the agency conducted 36 status reviews on FY2013 cost-share contracts throughout various project watersheds. No brush density assessments indicated the target species was above 5%, and no contracts were deemed out-of-compliance. These status reviews were conducted during the third year after initial treatment which is when follow-up brush treatment should be scheduled. WSEP staff reminded all landowners of their follow-up brush treatment obligations in their cost-share contracts and the schedule of follow-up brush treatment detailed in their resource management plans.



## ANNUAL ENHANCED WATER YIELD FOR FY2016

Full implementation of brush control, as modeled in all published feasibility studies for the 24 approved WSEP Project Watersheds, has a total projected annual water yield of 2.41 million acre-feet of water that could be conserved if the State was able to provide cost-share incentive funding to landowners to treat 15.86 million acres of brush in those watersheds.

During FY2016, through the WSEP, 41,208 acres of brush management was incentivized by the State in 9 project areas. For these acres, landowners received cost-share assistance through the program (contracts from FY2014, FY2015, and FY2016) totaling \$1,363,919 in state funding (average cost of \$33.10 per treated acre of brush). Based on estimates provided by feasibility studies and computer models, and depending on the climatic conditions across the state that influence the sequence of drought and rainfall events, this work is projected to enhance water yield by 12,733.1 acre-feet per year (average cost of \$107.12 per acre-foot of water).



### **Little Wichita River Project**

<u>Acres</u>	<u>Public Water Supply Target</u>	<u>Enhanced Water Yield (gal)</u>
7,515	Lake Arrowhead	1,033,274,982
	<u>Population Served</u>	
	Wichita Falls and surrounding areas	

### **Lake Brownwood Project**

<u>Acres</u>	<u>Public Water Supply Target</u>	<u>Enhanced Water Yield (gal)</u>
256	Lake Brownwood	30,407,168
	<u>Population Served</u>	
	Brownwood and surrounding areas	

### **Upper Guadalupe River Project**

<u>Acres</u>	<u>Public Water Supply Target</u>	<u>Enhanced Water Yield (gal)</u>
952	Canyon Lake and Nimitz Lake	37,242,000
	<u>Population Served</u>	
	New Braunfels, San Marcos, Kyle, Buda, Boerne, Kerrville, and surrounding areas	

### **Edwards Aquifer – Frio River Project**

<u>Acres</u>	<u>Public Water Supply Target</u>	<u>Enhanced Water Yield (gal)</u>
1,018	Edwards Aquifer Recharge Zone in Frio River Watershed	340,804,663
	<u>Population Served</u>	
	Concan, Knippa, and Leakey	

### Edwards Aquifer – Medina River Project

<u>Acres</u>	<u>Public Water Supply Target</u>	<u>Enhanced Water Yield (gal)</u>
340	Edwards Aquifer Recharge Zone in Medina River Watershed	58,900,280
	<u>Population Served</u>	
	Castroville, Bandera, and Medina	

### Edwards Aquifer – Nueces River Project

<u>Acres</u>	<u>Public Water Supply Target</u>	<u>Enhanced Water Yield (gal)</u>
330	Edwards Aquifer Recharge Zone in Nueces River Watershed	20,933,060
	<u>Population Served</u>	
	Uvalde, Barksdale, and Camp Wood	

### Lake Kemp Project

<u>Acres</u>	<u>Public Water Supply Target</u>	<u>Enhanced Water Yield (gal)</u>
28,000	Lake Kemp and Lake Kickapoo	2,401,728,000
	<u>Population Served</u>	
	Wichita Falls and surrounding areas	

### Pedernales River Project

<u>Acres</u>	<u>Public Water Supply Target</u>	<u>Enhanced Water Yield (gal)</u>
296	Lake Travis	99,055,356
	<u>Population Served</u>	
	Cedar Park, Leander, Pflugerville, and surrounding areas	

### Twin Buttes Reservoir Project

<u>Acres</u>	<u>Public Water Supply Target</u>	<u>Enhanced Water Yield (gal)</u>
2,501	Twin Buttes Reservoir	126,735,191
	<u>Population Served</u>	
	San Angelo	

### FY2016 Total

<u>Brush Treated</u>	<u>Enhanced Water Yield</u>
<b>41,208</b> acres	<b>4,149,080,700</b> gallons
	<b>12,733.1</b> acre-feet

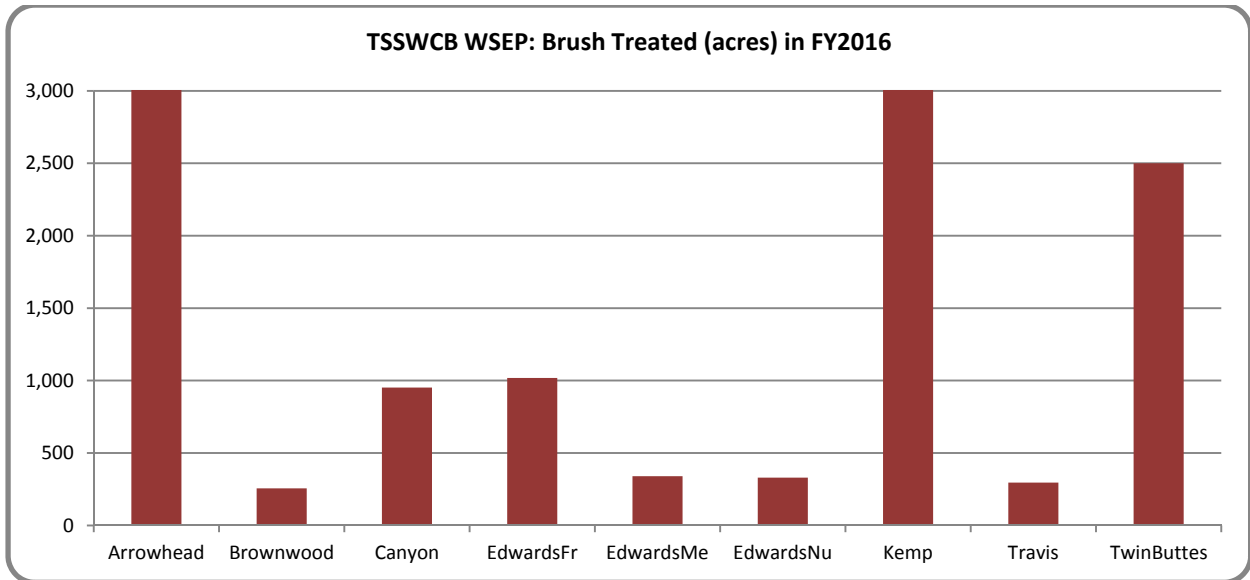


Figure 2. Acres of Brush Treated in FY2016 through the TSSWCB WSEP.  
 [Note: Arrowhead and Kemp exceed scale of chart.]

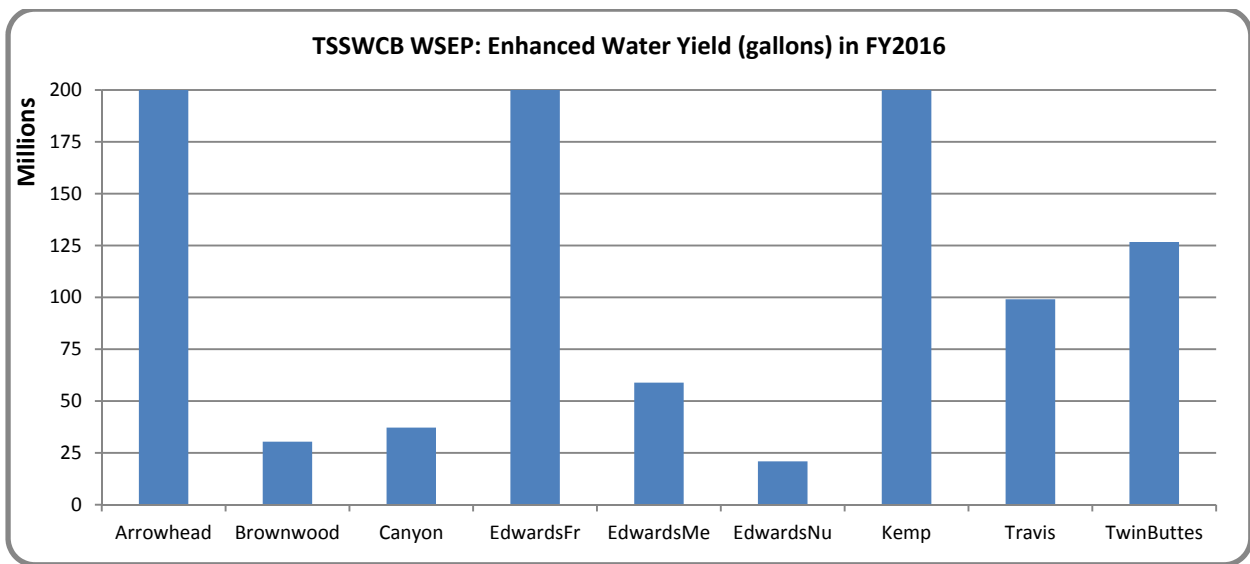


Figure 3. Gallons of Enhanced Water Yield from Brush Treated in FY2016 through the TSSWCB WSEP.  
 [Note: Arrowhead, EdwardsFr, and Kemp exceed scale of chart.]

*Voluntary land stewardship, on a grand scale, is a cornerstone solution for water supply issues in Texas. The efforts of private landowners to control water-depleting brush are vitally important to the ecological health of productive rangelands across the state. Many Texans today, especially those in urban areas, enjoy the public benefits, such as clean plentiful drinking water, they derive from the voluntary land stewardship provided by private landowners and agricultural producers throughout the state.*



**TEXAS STATE SOIL AND WATER CONSERVATION BOARD**

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