

**Annual Report  
to the  
Board of Directors  
on  
Attainment of Management Plan Goals  
and  
Selected Activities  
of the  
  
South Plains Underground  
Water Conservation District**



**Fiscal Year 2017**

**September 1, 2016 through August 31, 2017**

**PO Box 986  
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# South Plains Underground Water Conservation District

## Board of Directors

<u>Name</u>	<u>Representing</u>	<u>Term Ends</u>
Matt Hogue, President	Precinct 2	May 2018
Larry Yowell, Secretary	Director-at-Large	May 2020
Tye Day	Precinct 3	May 2020
David Swaringen, Member	Precinct 1	May 2020
Barrett Brown, Member	Precinct 4	May 2018

### Report Prepared By

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Manager

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## **District Mission Statement**

The South Plains Underground Water Conservation District will develop, promote, and implement management strategies to provide for the conservation, preservation, recharging, and prevention of waste of the groundwater resources, over which it has jurisdictional authority, for the benefit of the people that the District serves.

## **Introduction and Overview**

SB 1, 75<sup>th</sup> Texas Legislature (1997), requires groundwater conservation districts governed by Chapter 36, Texas Water Code, to submit management plans for certification by the Texas Water Development Board. The management plans must specifically address the following management goals as applicable:

1. providing for the most efficient use of groundwater
2. control and prevention of the waste of groundwater
3. control and prevention of subsidence
4. conjunctive surface water management issues
5. natural resource issues
6. drought conditions
7. conservation
8. recharge enhancement
9. rainwater harvesting
10. precipitation enhancement
11. brush control
12. desired future condition of the aquifers

The management plans must also identify the performance standards and management objectives under which each district will operate to achieve their management goals.

The current District Management Plan is effective until January 2019. After notice and hearing, the Board of Directors officially adopted the plan on December 3, 2013. The plan was certified by the Texas Water Development Board on January 13, 2014.

This annual report is a review of the District's activities for fiscal year 2017 and an evaluation of the District's performance in meeting its goals and objectives.

# Report on Attainment of Goals

## **Goal 1.0**      **Providing the most efficient use of groundwater**

### **Management Objective 1.01—Water Level Monitoring**

During the winter of 2017, a total of 146 wells were measured (140 Ogallala and 6 Edwards-Trinity (High Plains)).

#### **Performance Standards**

**1.01a**—146 wells were measured in 2017

**1.01b**—0 wells were not measured and removed from observation network

**1.01c**—146 water level measurements entered into database

**1.01d**—146 wells in network

**1.01e**—0 replacement Ogallala wells added

### **Management Objective 1.02—Technical Field Services**

12 requests for Technical Field Services were fulfilled in 2017. This is 13 less than the 25 requests in 2016.

Some tests were made for prospective land buyers.

#### **Performance Standards**

**1.02a**—12 field service requests were fulfilled

**1.02b**—12 tests were entered in database.

### **Management Objective 1.03—Laboratory Services**

The total number of lab tests performed for producers in 2017 was 25. This is fewer than the 41 tests run in 2016. These requests concern the suitability of irrigation water for certain crops.

Also, 5 bacteria tests were run in 2017, compared to 13 in 2016. Three of the tests were positive for either coliform or e-coli bacteria.

#### **Performance Standards**

**1.03a**—25 lab service requests were fulfilled

**1.03b**—25 records entered in database. Some of the results were from previous years, or from an outside lab.

**1.03c**—25 results were reported to constituents.

### **Management Objective 1.04—Irrigation Monitoring**

2017 marks the sixteenth year for the District's Flow Meter Program. With the help of approximately 35 cooperators, the District reads flow meters during the growing season to determine water usage on various crops. Water usage for 2017 will be calculated at the end of the growing season. The following table contains a summary of irrigation water applied during previous years. The data received from the flow meter readings also helps the District calculate water efficiency in crop production.

	<b>Cotton</b>	<b>Peanuts</b>	<b>Grain</b>	<b>Wheat</b>
<b>2002</b>	8.44 in	19.35 in	6.00 in	7.00 in
<b>2003</b>	10.79 in	19.85 in	5.30 in	5.87 in
<b>2004</b>	7.99 in	14.46 in	0.49 in	6.25 in
<b>2005</b>	9.86 in	16.59 in	0.50 in	3.42 in
<b>2006</b>	14.09 in	20.51 in	7.03 in	5.71 in
<b>2007</b>	6.52 in	13.36 in	9.16 in	3.34 in
<b>2008</b>	10.70 in	13.78 in	5.78 in	9.61 in
<b>2009</b>	13.46 in	20.81 in	8.35 in	8.07 in
<b>2010</b>	10.15 in	14.69 in	4.43 in	4.42 in
<b>2011</b>	17.92 in	24.58 in	N/A	7.54 in
<b>2012</b>	12.59 in	25.19 in	5.32 in	6.24 in
<b>2013</b>	14.71 in	23.02 in	15.98 in	8.95 in
<b>2014</b>	11.29 in	14.23 in	7.14 in.	5.94 in
<b>2015</b>	5.52 in.	8.90 in.	5.09 in.	5.94 in.
<b>2016</b>	8.34 in.	10.90 in.	2.00 in.	3.33 in.
<b>Average</b>	<b>10.82 in.</b>	<b>17.35 in.</b>	<b>5.50 in.</b>	<b>5.89 in.</b>

Table 1: Average Irrigation Application for Selected Crops (source: SPUWCD meters)

**Performance Standards**

**1.04a**—In 2017 there were 61 irrigation systems in the cooperative program

**1.04b**—Each year, the crops which are monitored vary according to what producers plant. In 2017, 8 different crops were monitored. These crops included cotton, peanuts, grain sorghum, wheat, watermelons, pumpkins, peas, and grapes.

**1.04c**—The table above shows the irrigation application for the major crops monitored.

**Management Objective 1.05—Center Pivot Inventory**

No center pivot inventory was required in 2017 by the District’s Management Plan.

**Performance Standards**

**1.05a**—N/A

**1.05b**—N/A

**1.05c**—1,390 pivots and, 80 sub-surface/above-ground drip type irrigation systems are active and entered in District’s database

**Goal 2.0**

**Controlling and Preventing Waste of Groundwater**

**Management Objective 2.01—Well Permitting and Completion**

Since March 1993, the District has issued 3,096 permits. The number of permits issued during 2017 was 163. This is higher than the 86 issued in 2016. February had the highest number of permits issued (34). Of the permits issued, 16 were either not used or a well was not completed. Also, 156 wells, which include irrigation and domestic, were inspected during 2017 to insure proper completion and spacing. At the time of inspection, the GPS location of the wells is obtained. This information is added to the data base. The coordinates are also added to the District’s ArcMap program so that all wells can be mapped. Currently 6,024 (78.5%) of the 7,671 wells within the District have GPS coordinates associated with them.

**Performance Standards**

**2.01a**—163 permits issued

**2.01b**—156 well sites inspected

**2.01c**—0 well sites failed to meet completion standards. The District’s well capping program has alleviated much of the trouble with completion standards.

**Management Objective 2.02—Open, Deteriorated or Uncovered Wells**

Open or uncovered wells are discovered in one of two ways:

1. a person reports it to the District office, or
2. District staff discovers the well during a field visit

No deteriorated or uncovered well was reported to or discovered by District staff during 2017.

**Performance Standards**

**2.02a**—0 open, deteriorated or uncovered well reported to the District

**2.02b**—N/A initial inspection

**2.02c**—N/A day to contact landowner

**2.02d**—N/A days to correct well

**2.02e**—N/A

**Management Objective 2.03—Maximum Allowable Production**

No instances of a maximum production violation were discovered this year

**Performance Standards**

**2.03a**—N/A

**2.03b**—N/A

**2.03c**—N/A

**Management Objective 2.04—Water Quality Monitoring**

Water quality samples were taken from 30 domestic wells during the summer of 2017. These samples were sent to the LCRA Environmental Laboratory Services in Austin for extensive analysis. The analysis included the following parameters: conductivity, nitrate/nitrite, chloride, fluoride, sulfate, arsenic and total organic carbon. Lab reports were mailed to participants. An interactive map with the 2017 results was posted on the website.

**Performance Standards**

**2.04a**—30 samples collected and analyzed.

**2.04b**—29 of 30 domestic wells (96%) sampled in 2015 were tested in 2017.

**2.04c**—30 test results were entered in database.

**Goal 3.0**      **Controlling and preventing subsidence**  
(not applicable)

**Goal 4.0**      **Conjunctive surface water management issues**  
(not applicable)

**Goal 5.0**      **Natural resource issues**  
(not applicable)

## **Goal 6.0**      **Drought Conditions**

### **Management Objective 6.01—Rain Gages**

The District maintains a network of 36 electronic rain gages. These gages allow staff to gather rainfall information at any time, not necessarily at the end of each month. The exact time and amount of rain collected is downloaded from the gage to a computer. This information is published on the District’s web site. Rainfall for the years 2011-2017 are available on the web site.

### **Performance Standards**

**6.01a**—36 rain gages in District network

## **Goal 7.0**      **Conservation**

### **Management Objective 7.01—Classroom Education**

During 2017, water conservation curriculum was made available on the education web site. Also, at the beginning of the school year, 4<sup>th</sup> and 5<sup>th</sup> grade science teachers received a gift basket which included information about curriculum and the District’s availability to give presentations to the students.

### **Performance Standards**

**7.01a**—The Education Coordinator made water conservation curriculum available to all 4<sup>th</sup> and 5<sup>th</sup> grade science teachers in the District with ideas and links to lesson plans in their gift baskets and also via the Education website: [savingsh2o.org](http://savingsh2o.org)

### **Management Objective 7.02—Newsletter**

Two editions of the District’s newsletter, *South Plains Groundwater News*, were published during 2017. The March edition of the newsletter contained a history of water level measurements from the District’s network of water level measurement wells. Also included was a map of the District showing locations of the measurement wells.

### **Performance Standards**

**7.02a**—Two newsletter editions were published

**7.02b**—1,258 newsletters were distributed

**7.02c**—Four articles addressed methods of enhancing and protecting the quantity of useable quality groundwater

### **Management Objective 7.03—News Releases**

Eight news articles were published in the *Brownfield News* during 2017. The news articles included items concerning conservation, groundwater awareness, scholarship winners, educational activities and rainwater harvesting. Once again, the District was a sponsor of the Ag Section in the Sunday edition of the local newspaper.

### **Performance Standard**

**7.03a**—Eight news releases were published in the local newspaper

### **Management Objective 7.04—Public Speaking Engagements**

The District fulfilled 7 public speaking engagements during 2017. These included:

- Presentations were made to approximately 200 4<sup>th</sup> and 5<sup>th</sup> graders at Kids, Kows & More in October.

- In January a presentation about the services of the SPUWCD was given to the Noon Lions Club
- In January, a presentation was given to the 2017 South Plains Ag Conference
- In February, a presentation was given at the West Texas Ag Farm Forum regarding the District and District activities.
- Presentations were given at all three schools in May, to the 4<sup>th</sup> and 5<sup>th</sup> graders, regarding the Conservation Calendar Art Contest. Awards were given to the winners at the schools' awards assemblies.
- In May a presentation was made to the Calvary Baptist Senior Group on rain water harvesting
- In May a presentation was made at the Rain Water Harvesting Workshop

**Performance Standard**

**7.04a**—Seven programs were presented to protect and enhance our groundwater

**Management Objective 7.05—Printed Material Resource Center and Technical File**  
 Thirty-six (36) different publications are displayed in the reception area of the office. These publications are obtained from various sources, including the TWDB, the USGS and AgriLife Extension Service. District staff developed twelve of the brochures.

161 items were distributed from the resources center.

**Performance Standards**

**7.05a**—There were 71 items on conservation, 38 on rules/management plan, 41 on water quality, and 11 on general information procured by the public from the resource center. Also, rule books were given to permit applicants as a part of the permitting process.

**7.05b**—No items were requested from the District's technical file

**Management Objective 7.06—Saturated Thickness Maps**

A new saturated thickness map was created in 2016.

**Performance Standards**

**7.06a**—1 saturated thickness map is available in the District office. The map is also available on the District's web site. Real estate agents and prospective land buyers frequently request this document. Eight maps were obtained from the resource center.

**Management Objective 7.07—Conservation Literature**

Nine publications displayed in the reception area of the office are devoted to water conservation for the home and the farm.

**Performance Standards**

**7.07a**—9 publications are dedicated to water conservation

**7.07b**—71 items were obtained by the public

**Goal 8.0**

**Recharge Enhancement**

(not applicable)

## Goal 9.0

### Rainwater Harvesting

#### **Management Objective 9.01—Public Awareness Program**

In 2017, the District continued emphasizing rainwater harvesting.

- The District submitted the Martin Family Farms rainwater harvesting project to the TWDB for their annual Rain Catcher Award. The project was awarded the 2016 Rain Catcher Award and received the award in March at the TWDB Board meeting.
- Terry County Judge Wagner proclaimed the first week of May to be Rainwater Harvesting Awareness week. The staff set up at various locations around town throughout that week with our rainwater harvesting display and education trailer. People who stopped by entered to win a rain barrel and rain chain which were given away each of the 3 days.
- The District hosted its annual Rainwater Harvesting Workshop. Participants signed up for the workshop which was advertised on the District's web site, on Town Talk radio and in the *Brownfield News*. At the workshop, a presentation was given on rainwater harvesting. The workshop participants learned about the District's rainwater harvesting system and the xeriscape demonstration garden. Rain barrels and rain chains were given to the first 20 participants who signed up for the workshop. Approximately 30 people attended the workshop.



#### **Performance Standards**

**9.01a**—Rainwater harvesting information presented to 30 attendees of the Rainwater Harvesting Workshop in May and numerous people who visited our site during Rainwater Harvesting Awareness week.

**Goal 10.0**      **Precipitation Enhancement**  
(not applicable)

**Goal 11.0**      **Brush Control**  
(not applicable)

**Goal 12.0**      **Desired Future Condition of the Aquifers**

The members of GMA #2 met on October 19, 2016 in Brownfield to adopt a DFC. The voting representative for each District was present. Comments received during the public comment period were discussed. The members approved Resolution 16-01 which states that “the desired future condition for the Ogallala and Edwards-Trinity (High Plains) aquifers is average drawdown of between 23 and 27 feet for all of GMA 32. The drawdown is calculation from the end of 2012 conditions to the year 2010.” The resolution also states that “the desired future condition for the Dockum Aquifer is average drawdown of 27 feet for all of GMA #2. The drawdown is calculated from the end of 2012 conditions to the year 2070 and is based on Scenario 16.” The DFC was adopted unanimously.

**Management Objective 12.01—Calculate Annual Drawdown**

**Performance Standards**

**12.01a**—The average drawdown results were presented to the District Board at their December Board meeting

**12.01b**—The average drawdown results were published in the March edition of the *South Plains Groundwater News*.

**Management Objective 12.02—Calculate Cumulative Annual Drawdown**

**Performance Standards**

**12.02a**—The cumulative average annual drawdown results were presented the District Board at their December Board meeting.

**12.01b**—The cumulative annual drawdown was published in the March edition of the *South Plains Groundwater News*.

## **OTHER ACTIVITIES**

### **IRS COST-IN-WATER DEPLETION PROGRAM**

2017 was the 18<sup>th</sup> year the South Plains Underground Water Conservation District participated in the IRS cost-in-water depletion program. This program benefits irrigated landowners who have experienced a cash loss due to declining water levels. 38 landowner requests were processed. There was 1 new parcel added to the program.

### **SPUWCD.ORG**

The District has developed and maintains a web site. The site provides education and information for District constituents, as well as people state-wide. The web site can be accessed from the Texas Alliance of Groundwater District's web site and is linked from various water district web sites. General information, hydrologic maps, rainfall information, newsletters, rules, management plan and water level data are available on the site. In 2015, a weather station was installed at the District office. The real-time information is accessible on the Home Page. Interactive maps were also added to enhance water levels and water quality information. In 2017, there were a total of 2,587 visits to [www.spuwcd.org](http://www.spuwcd.org).

### **HIGH SCHOOL ESSAY SCHOLARSHIP PROGRAM**

2017 was the third year that scholarships were made available to all 3 high schools in the District. This year's essays addressed the topic of rain water harvesting as it relates to conservation. Multiple entries from each school were submitted. The essays were judged by a panel of retired teachers. 1<sup>st</sup> and 2<sup>nd</sup> place scholarships were awarded in each high school for a total of \$4,500. To date, the District has awarded \$10,000 in scholarships.

### **SOUTHERN OGALLALA CONSERVATION AND OUTREACH PROGRAM**

In 2007, the District joined Llano Estacado UWCD and Sandy Land UWCD to form The Southern Ogallala Conservation and Outreach Program (SOCOP) which serves the education needs of the three districts. Through the Education Coordinator hired by SOCOP, more emphasis has been placed on education to students in the three school districts in the SPUWCD.

This year, the 12<sup>th</sup> annual "Water Conservation Art Contest" for 4<sup>th</sup> and 5<sup>th</sup> graders was conducted. Students submitted water conservation art work after hearing a presentation concerning water usage and conservation. The winning art works will be featured in a 2018 calendar to be published and distributed by the District. Approximately one hundred 2017 Water Conservation calendars were distributed throughout the District.

The education website, [www.savingH2O.org](http://www.savingH2O.org) continues to be a part of the District's public education outreach. This outlet contains water conservation tips and information regarding the District's education program along with curriculum ideas for teachers.

SOCOP participated in and held numerous education programs for the three school districts. Education programs were also presented for adults within the District. These presentations included:

- "Lights Out", Parents Night
- Alpha Omega Study Club
- "Western Day" at Colonial Height Elementary school

- Presentation at Kendrick Memorial Library
- Numerous invitations by Town Talk Radio to talk about the programs

### **COALITION OF AG PROFESSIONALS**

The goal of this group is to encourage Terry County youth to pursue careers in agriculture. The group works with the area's high school administrators and counselors. The group hosted an Agricultural Career Expo (ACE) in May at various ag related venues throughout the county. The Expo informed high school sophomores about the different education and job opportunities available in the agricultural field. The District participated in the ACE day at three different venues in the District.

### **WATER LEVEL RECORDERS**

The District continues to monitor the 14 well sites which are equipped with continuous monitoring water level recorders. These devices obtain daily water level measurements. Readings are downloaded periodically and converted to chart form. The data is also mailed to the well owners/operators, and posted on the District web site. The District continues to monitor these sites and plans to add more wells to the system. The TWDB also has a continuous water level measurement well. The continuous readings from this well are also available on the Districts web site.

### **USGS HYDROLOGY STUDY**

At In 2014, the Board of Directors voted to contract with the USGS to conduct a comprehensive study of the Ogallala and Edwards Trinity aquifers in the District. The objective of the project is to develop an updated regional conceptual model of the hydrogeologic framework, geochemistry and groundwater-flow system of the Ogallala and Edwards-Trinity (High Plains) aquifers within the District. Updates are presented to the Board by USGS staff. In 2015, the Board voted to continue with Phase 2 of the USGS study. The scientific report of Phase 1 was presented to the Board at their August 2016 meeting. The USGS attended the February 7<sup>th</sup> meeting and gave a report on the water quality results.

Because declines in the saturated thickness of the aquifers raise concerns of possible groundwater quality degradation, groundwater quality sampling is planned to define groundwater sources, recharge, discharge and mixing zones. A better understanding of the hydrogeology, geochemistry, and groundwater flow will help guide water management decisions.

### **RAINWATER HARVESTING SYSTEM AND XERISCAPE GARDEN**

The District's rainwater harvesting system and xeriscape continue to provide valuable education opportunities for the District constituents. In August, a group of summer school kids visited. They learned about the plants, about rainwater harvesting and had a really neat lesson about the Texas Bluebonnet. They also made water-cycle bracelets.



## **RAINWATER HARVESTING PROJECT**

At their April 2017 Board meeting, the Board approved funds for a rainwater harvesting system to be installed at Bi-Centennial Park across from the Brownfield Chamber of Commerce. The project consists of a 14' X 14' cement pad and a pavilion structure with rain gutters. The District installed a rainwater harvesting system which includes a 550-gallon rain barrel and pump. The rainwater that is collected will be mainly used to water the grape vines in the park. The project has great visibility from the main intersection through Brownfield. The Chamber of Commerce featured the system at a ribbon cutting in May.





### **FLOW METER COST-SHARE**

In June 2015, the Board applied for and received a grant from the Texas Water Development Board (TWDB) for 50/50 funding toward the purchase of flow meters. Meters are not required by District rules. However, they are an important tool for producers. In 2017, one producer took advantage of the grant funds and purchased a flow meter through the District. The District has partnered with the NRCS RCPP Program to provide additional funding for water conservation measures such as flow meters. The producer took advantage of that funding also.

## SUMMARY

The original legislative intent of groundwater district performance evaluations through management plan certification and auditing was to answer two main questions:

1. Is the district operational, and
2. Is the district actively engaged in achieving stated goals, objectives, and performance standards?

Without a doubt, the South Plains Underground Water Conservation District is operational and is achieving its stated goals, objectives, and standards. That is not to say, however, that there is no room for improvement.

The following are recommendations where the District could improve its service:

<b>Management Objective</b>	<b>Recommendation</b>
<b>1.01—Water Level Monitoring</b>	Consider more continuous-monitoring well sites
<b>1.02—Technical Field Services</b>	N/A
<b>1.03—Laboratory Services</b>	N/A
<b>1.04—Irrigation Monitoring</b>	Continue to repair flow meters already used for monitoring. Urge more producers to take advantage of cost-share to install flow meters.
<b>1.05—Center Pivot Inventories</b>	N/A
<b>2.01—Well Permitting and Completion</b>	N/A
<b>2.02—Open or Uncovered Wells</b>	N/A
<b>2.03—Maximum Allowable Production</b>	N/A
<b>2.04—Water Quality Monitoring</b>	Address concerns related to increased oil field activity.
<b>6.01—Rain gages</b>	N/A
<b>7.01—Classroom Education</b>	N/A
<b>7.02—Newsletter</b>	N/A
<b>7.03—News Releases</b>	Prepare more articles for the local newspaper
<b>7.04—Public Speaking Engagements</b>	Continue to be available to speak at events in the District
<b>7.05—Resource Center/Technical File</b>	N/A
<b>7.06—Saturated thickness Maps</b>	N/A

**7.07—Conservation Literature**

N/A

**9.01—Rainwater Harvesting**

Seek more opportunities to use cost-share funds to install rain water harvesting systems.