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 2016

September 1, 2015 through August 31, 2016

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South Plains Underground Water Conservation District

Board of Directors

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

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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, 75th 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 2016 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 2016, a total of 143 wells were measured (138 Ogallala and 5 Edwards-Trinity (High Plains).

Performance Standards
1.01a—143 wells were measured in 2016
1.01b—1 well was not measured and removed from observation network
1.01c—143 water level measurements entered into database
1.01d—143 wells in network
1.01e—0 replacement Ogallala wells added

Management Objective 1.02—Technical Field Services
25 requests for Technical Field Services were fulfilled in 2016. This is 12 more than the 7 requests in 2015.

Some tests were made for prospective land buyers.

Performance Standards
1.02a—25 field service requests were fulfilled
1.02b—25 tests were entered in database.

Management Objective 1.03—Laboratory Services
The total number of lab tests performed for producers in 2016 was 41. This is higher than the 17 tests run in 2015. These requests concern the suitability of irrigation water for certain crops.

Also, 13 bacteria tests were run in 2016, compared to 4 in 2015. Three of the tests were positive for either coliform or e-coli bacteria.

Performance Standards
1.03a—54 lab service requests were fulfilled
1.03b—54 records entered in database. Some of the results were from previous years, or from an outside lab.
1.03c—54 results were reported to constituents.

Management Objective 1.04—Irrigation Monitoring
2016 marks the fifteenth year for the District's Flow meter Program. With the help of approximately 40 cooperators, the District reads flow meters each month during the growing season to determine water usage on various crops. Each month a report is mailed to the producer showing water usage for that month and the total for the year. Water usage for 2016 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.

	Cotton	Peanuts	Grain	Wheat
2002	8.44 in	19.35 in	6.00 in	7.00 in
2003	10.79 in	19.85 in	5.30 in	5.87 in
2004	7.99 in	14.46 in	0.49 in	6.25 in
2005	9.86 in	16.59 in	0.50 in	3.42 in
2006	14.09 in	20.51 in	7.03 in	5.71 in
2007	6.52 in	13.36 in	9.16 in	3.34 in
2008	10.70 in	13.78 in	5.78 in	9.61 in
2009	13.46 in	20.81 in	8.35 in	8.07 in
2010	10.15 in	14.69 in	4.43 in	4.42 in
2011	17.92 in	24.58 in	N/A	7.54 in
2012	12.59 in	25.19 in	5.32 in	6.24 in
2013	14.71 in	23.02 in	15.98 in	8.95 in
2014	11.29 in	14.23 in	7.14 in.	5.94 in
2015	5.52 in.	8.90 in.	5.09 in.	5.94 in.
Average	**11.00 in.**	**17.81 in.**	**5.76 in.**	**6.07 in.**

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

Performance Standards
1.04a—In 2016 there were 64 irrigation systems in the cooperative program
1.04b—Each year, the crops which are monitored vary according to what producers plant. In 2016, 10 different crops were monitored. These crops included cotton, peanuts, grain sorghum, wheat, watermelons, pumpkins, corn, peas, squash 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 2016 by the District's Management Plan.

Performance Standards
1.05a—N/A
1.05b—N/A
1.05c—1,423 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 over 2,933 permits. The number of permits issued during 2016 was 86. This is higher than the 71 issued in 2015. March had the highest number of permits issued (16). Of the permits issued, 3 were either not used or a well was not completed. Also, 111 wells, which include irrigation and domestic, were inspected during 2016 to insure proper completion and spacing.

Performance Standards
2.01a—86 permits issued
2.01b—111 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 2015.

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 83 irrigation wells during the summer of 2016. The samples were tested for conductivity, total dissolved solids, chlorides and nitrates.

Performance Standards
2.04a—83 samples collected and analyzed.
2.04b—79 of 83 wells (95%) sampled in 2015 were tested in 2016.
2.04c—83 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 2011-2016 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 2016, water conservation curriculum was made available on the education web site. Also, at the beginning of the school year, 4th and 5th 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 4th and 5th grade science teachers in the District with ideas and links to lesson plans in their gift baskets and also via the Education website: savingh2o.org

Management Objective 7.02—Newsletter
Two editions of the District's newsletter, *South Plains Groundwater News*, were published during 2016. 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—1,556 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 2016. 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 9 public speaking engagements during 2016. These included:

- Presentations were made to approximately 200 4th and 5th graders at Kids, Kows & More in October.
- Update on water levels and the irrigation monitoring program at the 2016 South Plains Ag Conference
- Presentations were given at all three schools in May, to the 4th and 5th graders, regarding the Conservation Calendar Art Contest. Awards were given to the winners at the schools' awards assemblies.
- In November and December, Town Talk Radio invited the District staff to talk about various District activities and information on rainfall.

- In April, Town Talk Radio invited the District to talk about the upcoming Rain Water Harvesting workshop
- In May a presentation was made at the Rain Water Harvesting Workshop

Performance Standard
7.04a—Nine 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.

183 items were distributed from the resources center.

Performance Standards
7.05a—There were 82 items on conservation, 35 on rules/management plan, 13 on water quality, and 53 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—82 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 May, the District hosted a 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. A presentation on the cost-share rainwater harvesting project with a local producer was given by the producer. There were also presentations given regarding lawn care during the drought and xeriscape landscapes. Rain barrels and rain chains were given to the first 20 participants who signed up for the workshop. Approximately 30 people attended the workshop.

The workshop participants were able to see and learn about the District's rainwater harvesting system which has been installed on the storage barn.

Performance Standards

9.01a—Rainwater harvesting information presented to 30 attendees of the Rainwater Harvesting Workshop in May.

Goal 10.0 **Precipitation Enhancement**

(not applicable)

Goal 11.0 **Brush Control**

(not applicable)

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

In 2010 the District adopted a DFC. GMAs are required to meet annually. The members of GMA #2 met in January at the Sandy Land UWCD's office to begin the task of adopting new DFCs as required. In March the group met at the Llano Estacado UWCD's office. At their meeting in April at the office of Mesa UWCD, the voting members adopted a proposed DFC for the relevant aquifers. Each district held public hearings to receive comment on the proposed DFCs. The SPUWCD held its public hearing at their regular Board meeting on July 5, 2016. There was no comment offered regarding the proposed DFC. After all districts hold public hearings and submit a report, the members of GMA #2 will meet to adopt the DFCs.

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

2016 was the 17th 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. 34 landowner requests were processed. There were 2 new parcels 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. The District produced the Terry County Vineyard map in 2014, 2015 and again in 2016. The 2016 map is available on the web site. In 2016, there were a total of 74,590 visits to www.spuwcd.org.

HIGH SCHOOL ESSAY SCHOLARSHIP PROGRAM

2016 was the second 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. 1st and 2nd place scholarships were awarded in each high school for a total of $4,500.

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 11th annual "Water Conservation Art Contest" for 4th and 5th 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 2017 calendar to be published and distributed by the District. Approximately one hundred 2016 Water Conservation calendars were distributed throughout the District.

The education website, www.savingH_2O.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.

The District participated in and held numerous education programs for the three school districts. Education programs were also presented for adults within the District.

In 2015, SOCOP purchased a 24' trailer to be used as a mobile classroom within the 3 district area. The trailer will be used at various venues including schools and Kids, Kows & More. The trailer will open up many new opportunities for water conservation education.

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 August 2nd meeting and gave a report on the water quality results. The USGS publication on the first phase was completed and made available.

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 hydrologeology, geochemistry, and groundwater flow will help guide water management decisions.

RAINWATER HARVESTING SYSTEM AND XERISCAPE GARDEN

The District is committed to educating the public about the importance of water conservation. In 2015 the District installed a rainwater harvesting system on their storage barn which is located next to the office. The system features a 550 gallon storage tank. A second 550 gallon storage tank was added to the system this year. Also, a local landscape company installed xeriscape to the area in front of the barn. The xeriscape is watered with the stored rain water.

The rainwater harvesting system and xeriscape provide valuable education opportunities for the District constituents. In June, two different groups of students from the local elementary schools had a chance to tour the xeriscape garden and learn about rain water harvesting and water conservation.

RAIN WATER HARVESTING COST-SHARE

At their March 2016 Board meeting, the Board approved cost-share funds for a rain water harvesting system to be installed on a local producer's barn. The system has been installed and includes 30,000 gallons of rain water storage. The stored water is used primarily for spraying crops. This project also received cost-share funds from the Terry County Soil & Water Conservation District.

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. Three flow meters have been placed in the District through this program. This includes 2 electronic flow meters.

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:

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