

**ANNUAL REPORT
to the
Board of Directors
On
Attainment of Management Plan Goals
and
Selected Activities
Of the**

**LLANO ESTACADO UNDERGROUND
WATER CONSERVATION DISTRICT**

**Fiscal Year 2018
October 1, 2017 through September 30, 2018**

**200 S E Ave C
Seminole, TX 79360
432-758-1127**

Llano Estacado Underground Water Conservation District

Board of Directors

<u>Name</u>	<u>Representing</u>	<u>Term Ends</u>
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Walter Billings, Secretary	Precinct 1	May 2019
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Report Prepared By

Lori Barnes
Marie Neufeld
Don Harridge

District Manager
Administrative Assistant
Field Technician

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District Mission Statement

The Llano Estacado Underground Water Conservation District (the District) will develop, promote, and implement management strategies to provide for the conservation, preservation, protection, recharging, and prevention of waste of the groundwater resources, over which it has jurisdiction, 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. provision 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 Management Plan of the District was developed during the summer of 2015. After notice and hearing, the Board of Directors officially adopted the plan on August 13, 2015. The plan became effective on August 13, 2015 and was certified by the Texas Water Development Board on September 15, 2015

This annual report is a review of the District's activities for fiscal year 2017 - 2018 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 2018, a total of 171 wells were measured (171 Ogallala).

Performance Standards

1.01a – 100% of measurement wells from the previous year were again measured.

1.01b – 100% of wells had field notes written

1.01c – 171 water level measurements entered into database

1.01d – 171 wells in network

1.01e – 0 replacement Ogallala wells added

Management Objective 1.02 – Technical Field Services

31 requests for Technical Field Services were fulfilled in 2017-2018. This is 113 less than the 144 request in 2016-2017. February was the busiest month for flow test, when 15 test were performed.

Performance Standards

1.02a – 31 field service requests were fulfilled

1.02b – 31 test were entered in database.

Management Objective 1.03 – Laboratory Services

The total number of lab tests performed for producers in 2017-2018 was 64. This is 44 more than the 20 tests run in 2016-2017. These requests concern the suitability of irrigation water for certain crops.

Performance Standards

1.03a – 64 lab service requests were fulfilled

1.03b – 64 records entered in database.

1.03c – 64 results were reported to constituents.

Management Objective 1.04 – Research and Demonstration

N/A

Management Objective 1.05 – Center Pivot Inventory

Center pivot inventory was required in 2014 by the District's Management Plan.

Performance Standards

1.05a – N/A

1.05b – N/A

1.05c – 2113 pivots, 6 LEPA, 26 MESA, 1,125 LPIC, 816 LESA, 11 Side Row water, and 23 Drip Type Irrigation, systems are entered in District’s database

Goal 2.0

Controlling and Preventing Waste of Groundwater

Management Objective 2.01 – Well Permitting and Completion

Since November 1999, the district has issued over 6,135 permits. The number of permits issued during 2017-2018 was 431. This is higher than the 368 issued in 2016-2017. March had the highest number of permits issued, which was 85.

Also, 427 wells were inspected during 2017-2018 to insure proper completion and spacing. Some of these well were from previous years.

Performance Standards

2.01a – 431 permits issued

2.01b – 427 well sites inspected, 62 well sites were from previous years.

2.01c – 68 well sites failed to meet 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

Nineteen, uncovered wells were discovered during District Staff field visit, during 2017-2018.

Performance Standards

2.02a – 17 open, uncovered wells were discovered by District staff

2.02b – District staff notify responsible party

2.02c – 5 days to make initial contact with responsible party

2.02d – 2 weeks for responsible party to complete closure of uncovered wells

2.02e – 100% have been covered

Management Objective 2.03 – Maximum Allowable Production

No instance 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 100 wells during the summer of 2018. The samples were tested for conductivity, total dissolved solids, chlorides, alkalinity, hardness, fluoride, iron and nitrates. The 2018 water quality map will be posted for viewing and printing on the District’s web site.

Performance Standards

- 2.04a – 100 samples collected and analyzed
- 2.04b – 100% of wells sampled in 2018, 100 were sampled in 2017
- 2.04c – Water quality maps were made available to the public
- 2.04d – 100 test results were entered in database

Goal 3.0 **Addressing Drought Conditions**

For educational purposes, the link to the TWDB drought page which has much useful information. That link is: <http://waterdatafortexas.org/drought/>

Management Objective 3.01 – Rain Gauges

The District maintains a network of 60 gauges. The District’s network of rain gauges averaged 10.57 inches for the year 2017-2018 compared to 14.71 inches for the same period last year. The readings from the rain gauges are gathered monthly.

Performance Standards

- 3.01a – 60 rain gauges in District network
- 3.01b – 720 Yearly rain gauge readings of 720 possible

Goal 4.0 **Addressing Conservation**

Management Objective 4.01 – Classroom Education

During 2017-2018, water conservation curriculum was made 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: savingsh2o.org

Performance Standards

- 4.01a – Water conservation curriculum was made available to all three elementary schools in the District

Management Objective 4.02 – News Releases

Nine news articles were published in the Seminole Sentinel News during 2017-2018. These articles addressed the District’s cost-in-water depletion program, “Water Conservation Scholar Ship” and articles prepared by the Education Coordinator.

Performance Standards

4.02a - Nine news releases were prepared for publication in the local newspaper

Management Objective 4.03 – Public Speaking Engagements

The District fulfilled twenty-nine public speaking engagements during 2017-2018. These included:

- Presentation made to approximately 22 Citizens at the Rainwater Harvesting & Xeriscaping Workshop
- Two presentation were given @ two High Schools
- Eight presentation was made to approximately 325 4th graders at Ag & Oil Day
- Three presentations were given at all three schools in September regarding the Conservation Calendar Art Contest
- Two presentation were given to Farm Bureau
- Three presentation were given at Summer Library Programs
- Welcome Back Teacher Baskets were presented at three schools districts

Performance Standard

4.03a – 29 programs were presented to protect, conserve and enhance our groundwater

Management Objective 4.04 – Printed Material Resource Center and Technical File

Eleven (11) Different publications are displayed in the library area of the office. These publications are obtained from various sources, including the TWDB, the USGS and the Texas Ag Extension Service.

Performance Standards

4.04a – There 88 items on conservation, 6 on rules, and 11 on permitting, 11 on water quality

4.04b – N/A

Management Objective 4.05 – Saturated Thickness Maps

The most recent saturated thickness map is from 2015. No additional saturated thickness map is required until 2020.

Performance Standards

4.05a – There is currently one saturated thickness maps displayed in the District office and located on the District web site. Real estate agents and prospective land buyers frequently request this document.

Management Objective 4.06 – Conservation Literature

Eight publications displayed in the library area of the office are devoted to water conservation for the home and the farm

Performance Standards

4.06a – 8 publications are dedicated to water conservation
4.06b – 0 items were obtained by the public in 2017 - 2018

Goal 5.0 **Addressing Rainwater Harvesting**

Management Objective 5.01 – Addressing Rainwater Harvesting

In May, the District hosted a Rainwater Harvesting & Xeriscaping Workshop. Participants signed up for the workshop which was advertised on the District's web site, KIKZ radio, and in the Seminole Sentinel. At the workshop, a brief explanation of rainwater harvesting was given by the Education Coordinator. There were also presentations given regarding lawn care during the drought and xeriscape landscapes.

Performance Standards

5.01 - 15 participants received rain barrels and a rain chains.

Goal 6.0 **Addressing Precipitation Enhancement**

6.01 - While the District did participate in this program for twelve years, the program has been dissolved. Therefore this goal is not applicable.

Goal 7.0 **Controlling and Preventing Subsidence**

7.01 - This goal is not applicable to the District because there is no surface water in our district. Referenced in Chapter 36, Texas Water Code. TWC § 36.1071 (a) (3).

Goal 8.0 **Addressing Conjunctive Surface Water Management Issues**

8.01 - This goal is not applicable to the District because there is no fresh surface water in our district. Referenced in Chapter 36, Texas Water Code. TWC § 36.1071 (a) (4).

Goal 9.0 **Addressing Natural Resource Issues**

9.01 - This Goal is not applicable to the District because there is no fresh surface water in our district. Referenced in Chapter 36, Texas Water Code. TWC § 36.1071 (a) (5).

Goal 10.0 **Addressing Recharge Enhancement**

10.1 - A review of past work conducted by others indicates this goal is not applicable at present. Therefore this goal is not applicable.

Goal 11.0 **Addressing Brush Control**

11.01 - Existing programs administered by the USDA – NRCS are sufficient for addressing this goal. The Board does not believe that this activity is cost-effective and applicable for the District at this time. Therefore this goal is not applicable.

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

In 2016 of October, Groundwater Management Area 2, adopted Desired Future Conditions (DFC). They are as follows:

- A total average drawdown of approximately 23 to 27 feet for the period 2012-2070 for the Ogallala and Edwards-Trinity (High Plains) Aquifers within the GMA.
- A total average drawdown of 27 feet for the Dockum Aquifer for the same 58-year time period.

Both DFCs are based upon examination and evaluation of 16 scenarios using the High Plains Aquifer System (HPAS) groundwater availability model.

The process of adopting a DFC was established by the Texas Legislature in 2005 and requires groundwater conservation districts to establish DFCs for relevant aquifers at least once every five years. GMAs are required to meet annually.

Management Objective 12.01 – Calculate Annual Drawdown

Performance Standards

12.01a - The calculate annual drawdown results were presented to the District Board in the Annual Hydrograph Report at their December Board meeting

12.01b - The average drawdown results were presented to the District Board at their December Board meeting

Management Objective 12.02 – Calculate Cumulative Drawdown

Performance Standards

12.02a – The cumulative drawdown results were presented to the District Board in the Annual Hydrograph Report at their December Board meeting.

12.02b – The cumulative average annual drawdown results were presented to the District Board at their December Board meeting.

OTHER ACTIVITIES

IRS COST – IN – WATER DEPLETION PROGRAM

2017 - 2018 was the 16th year the Llano Estacado 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. 65 landowner requests were processed.

LLANOESTACADOUWCD.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 accessible 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 district program descriptions are available on the site. In this fiscal year there were a total of 1,175 visitors to the web site.

FLOWMETER PROGRAM

2017-2018 marks the 10th year for the District's Flowmeter Program. With the help of approximately 14 cooperators, the District reads flow meters every 2 weeks during the growing season to determine water usage on various crops. Water usage for 2018 was calculated at the end of the growing season. The following table contains a summary of irrigation water applied during this year. The data received from the flow meter readings also helps the District calculate water efficiency in crop production.

	<u>Cotton</u>	<u>Peanuts</u>	<u>Other</u>	<u>Wheat</u>
2009 (total)	55.3 in.	45.169 in.	in.	in.
Average	13.835 in.	22.589 in.	in.	in.
2010 (total)	99.8488 in.	13.499 in.	6.161 in.	
Average	15.949 in.	13.499 in.	6.161 in.	
2011 (total)	90.143 in.	45.987 in.		
Average	12.878 in.	22.994 in.		
2012 (total)	132.845 in.	42.386 in.		
Average	16.605 in.	21.193 in.		
2013 (total)	95.88 in.	48.53 in.	17.7 in.	
Average	11.99 in.	16.18 in.	17.7 in.	
2014 (total)	57.03 in.	27.57 in.	42.09 in.	15.87 in.
Average	11.41 in.	27.57 in.	14.03 in.	15.87 in.
2015 (total)	98.34 in.	28.12 in.	5.46 in.	
Average	8.94 in.	7.03 in.	5.46 in.	
2016 (total)	104.73 in.	32.93 in.		
Average	8.73 in.	8.24 in.		
2017 (total)	83.36 in.	68.53 in.	12.39 in.	
Average	8.33 in.	17.14 in.	12.39 in.	
2018 (total)	122.39 in.	16.08 in.	3.28 in.	
Average	9.42 in.	8.04 in.	3.28 in.	

PUBLIC EDUCATION

In 2007, the District joined South Plains UWCD, 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 LEUWCD

This year, the 12th annual “Water Conservation Art Contest” 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. Calendars from the 2018 Water Conservation Contest were distributed throughout the District.

The District sponsored a “Water Conservation Scholar Ship Award” in 2017 - 2018. All senior students were eligible to enter the essay contest. Contest winners from each school, Loop, Seagraves and Seminole will receive a \$1,000 scholarship for 1st Place, \$500.00 scholarship for 2nd Place and sent to the college of their choice.

The education website, www.savingH2O.org continues to be a part of the District’s public education outreach along with an education blog and a Twitter entry. These mediums contain water conservation tips and information on the District’s education program.

In 2018, SOCOP completed the installation of the models on the Education Trailer. The outside of the trailer is wrapped to emphasize water conservation using the SOCOP’s own Aqua Cop character. The models in the trailer teach about the aquifer, water use in the home and rainwater harvesting. Each District contributed funds for the trailer’s completion as did the county Farm Bureau office of each District. Already, the trailer has made stops in each District and has had a very positive response. Both children and adults can learn from the inside and outside displays.

WATER LEVEL RECORDERS

The District now has 3 well sites equipped with continuous monitoring water level recorders. These devices obtain daily water level measurements. Readings will be downloaded periodically and converted to chart form, then presented to the Directors annually meetings. The data will also be mailed to the well owners/ operators. The District will monitor these sites and plan to add more wells to the system.

USGS HYDROLOGY STUDY

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 USGS attended the Board meeting on October 12, 2017 and gave an update on their continuing work. On August 7, 2018, the three District

managers and staff met with the USGS in Seminole. The project is in the final stages and the Scientific Report is being reviewed. The web app will be released for public availability in the near future.

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 Llano Estacado Underground Water Conservation District is operational and 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	N/A
1.02 – Technical Field Services	N/A
1.03 – Laboratory Services	N/A
1.04 – Research and Demonstration	Consider a meeting to share results with cooperating producers
1.05 – Center Pivot Inventories	N/A
2.01 – Well Permitting and Completion	Staff needs to reiterate the importance of turning in paper work and completion of the well on time and the use of the well
2.02 – Open, Deteriorated or Uncovered Wells	Staff needs to reiterate the importance of completion of wells
2.03 – Maximum Allowable Production	N/A
2.04 – Water Quality Monitoring	Address concerns related to increased oil field activity
3.01 – Rain Gauges	N/A
4.01 – Classroom Education	
4.02 – News Release	N/A
4.03 – Public Speaking Engagements	N/A
4.04 – Printed Resource Center/Technical File	N/A
4.05 – Saturated Thickness Maps	N/A
4.06 – Conservation Literature	Work with the communities in the District and consider placing conservation literature at city offices.
5.01 – Addressing Rainwater Harvesting	N/A
6.01 – Addressing Precipitation Enhancement	N/A
7.01– Controlling and Preventing Subsidence	N/A

8.01- Addressing Conjunctive Surface Water Management Issues	N/A
9.01- Addressing Natural Resource Issues	N/A
10.01- Addressing Recharge Enhancement	N/A
11.01- Addressing Brush Control	N/A
12.01- Calculate Annual Drawdown	N/A
12.02- Calculate Cumulative Drawdown	N/A