

GROUNDWATER CONSERVATION





*Cover photo of the J.B. Buchanan Windmill Collection
in Spearman taken by Julia Stanford.*



MISSION STATEMENT

**Maintaining our way of life through the conservation,
protection and preservation of our
groundwater resources**

Location and Extent

The District covers approximately 7400 square miles in the northern Texas Panhandle encompassing Dallam, Hansford, Lipscomb, Ochiltree, and Sherman Counties, as well as parts of Hartley, Hutchinson, and Moore Counties.

BOARD OF DIRECTORS



Danny Krienke,
President
Ochiltree County



Bob Zimmer,
Vice President
Hansford & Hutchinson
Counties



Mark Howard,
Secretary
Hartley County



Gene Born,
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Lipscomb County



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Harold Grall,
Director
Moore County



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Dallam County

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LETTER FROM THE GENERAL MANAGER

Dear Stakeholders,

If the District is to achieve its mission, we must find ways to promote conservation and efficiency in addition to conservation rule enforcement. Examples of the District promoting conservation and efficiency include enhanced conservation education programming at the North Plains Water Conservation Center and the District seeking financial assistance to encourage the adoption of conservation technologies and practices. The Board of Directors added these goals and adopted a new management plan in March 2018.

One of the District's education efforts that has shown great success is the Master Irrigator Program. The program teaches growers irrigation management and conservation practices to save water, conserve energy, build soil health, and enhance their own profitability. The District partnered with the United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) to assist in financing the implementation of the practices and technologies producers learned about while completing the course. With over 213,500 acres of irrigated cropland influenced by 68 program graduates through 2018, the impact of the program has garnered statewide and national attention. Groundwater management districts in surrounding states have expressed interest in creating similar programming. The District's Master Irrigator Program was awarded the Texas Environmental Excellence Award, the highest environmental honor in the state. It is the second District conservation program to receive this distinction. The District received the award in 2012 for the "200-12 Program."

In June, the District staff and board hosted members of the Texas House Natural Resources Committee on a District field tour. The tour was part of committee visits across the state to research the legislature's interim charges. In response to one of the interim charges, the District organized and led a survey of the districts in Groundwater Management Area 1 to better understand the consistency and coordination of aquifer-wide management within the Ogallala aquifer. The Natural Resources Committee received the statistical results from the survey at a hearing in Palo Duro Canyon the day following the tour. The survey showed a very high rate of consistency between the districts in GMA 1.

Stakeholders in our District withdrew approximately 1.7 million acre-feet of groundwater in 2018, which represents about ten percent of all water used and about 20 percent of all groundwater pumped in Texas. I can't think of any other area in the state that relies more on groundwater than the eight counties we serve in the northern Panhandle. Because we rely so heavily on groundwater in our area to maintain our way of life, it is our responsibility as a district and as stakeholders to do everything that is reasonably possible to conserve groundwater for future generations, while protecting our current economy and way of life.



Steve Walthour
General Manager,
North Plains Groundwater Conservation District



Members of the House Natural Resources Committee from left to right: Four Price, DeWayne Burns, Paul Workman and Chairman Lyle Larson visited the North Plains Water Conservation Center in June to learn more about agriculture and water use in the northern Panhandle, District policies and rules, hydrogeology, and conservation education programs, including the District's irrigation demonstration programs at the North Plains Water Conservation Center.

The District's Progress in Achieving Management Goals

With the passing of Senate Bill 1 in 1997 the 75th Texas Legislature required groundwater conservation districts to design management plans to meet specific strategic goals as outlined in the legislation. Senate Bill 1 created a statewide groundwater management and planning process, while preserving local control over the process through the districts. The districts are required to examine and revise their management plan at least every five years. The current Management Plan was adopted in March of 2018.

This annual report is intended to give an annual update on North Plains Groundwater Conservation District's progress on each of the strategic goals included in its management plan. This report will be presented to the District's Board of Directors in a timely manner, and then made available to the public. A copy of the most current annual report will be available for public review on the District website at www.northplainsgcd.org and at the District office.

MANAGEMENT GOALS

A. Providing for the Most Efficient use of Groundwater

1. Groundwater Reporting

Management Objective:

Monitor total annual groundwater withdrawals through water use reporting by all producing groundwater right owners that have a well capable of producing more than 25,000 gallons of groundwater a day.

Performance Standards:

Annually, the District will collect production reports on all properties containing non-exempt wells and calculate annual groundwater withdrawals for the District.

Action Taken:

The District received production reports from 2880 properties. Annual groundwater withdrawals were calculated and published in the Hydrologic Report and presented to the Board at the June 2019 board meeting.

Table 1: Groundwater production reported to the District, 2014-2018 (Acre-feet).

County	2014	2015	2016	2017	2018 ^[A]	Average ^[B]
Dallam	393,700	297,000	339,200	312,300	349,900	338,420
Hartley	442,100	332,700	391,600	376,000	422,600	393,000
Moore	210,000	156,700	185,700	173,100	200,600	185,220
Sherman	361,400	251,700	285,300	265,100	312,000	295,100
Hansford	211,700	148,800	170,400	146,700	190,800	173,680
Hutchinson	74,000	57,700	67,700	63,600	75,500	67,700
Lipscomb	48,800	39,400	42,300	44,200	44,200	43,780
Ochiltree	106,300	77,400	81,400	77,300	95,500	87,580
West	1,407,200	1,038,100	1,201,800	1,126,600	1,285,100	1,241,400
East	440,800	323,300	361,700	331,900	406,000	374,080
Total	1,848,000	1,361,400	1,563,500	1,458,500	1,691,100	1,615,480

[A] 2018 Production data are provisional and subject to minor changes.

[B] Average is an average of the last five years.

2. Well Registrations and Permitting

Management Objective:

All exempt and non-exempt wells constructed within the jurisdiction of the District are required to be registered or permitted in accordance to the District's Rules.

Performance Standards:

District staff will verify all wells within a Groundwater Production Unit(s) are registered or permitted in accordance with the District Rules during any site visits.

Action Taken:

In 2018, the District inspected all GPU's on which applications were made for new permits for non-exempt wells. The following table shows the results from permitting and inspections, including any previously unregistered wells discovered during inspections of GPU's.

Table 2: Permitting and inspecting wells

GPU Inspections	Non-exempt Permits	Exempt Wells Registered	Unregistered Wells Discovered
113	154	110	11

3. Conservation Demonstration and Education

Management Objective:

Provide support through the District's North Plains Water Conservation Center, demonstrations, and other District education programs to promote groundwater conservation.

Performance Standards:

At least annually, conduct field days and/or other events to educate stakeholders regarding water use efficiency technologies and practices. The District will publish reports on the activities at the North Plains Water Conservation Center and other demonstrations and education programs.

Action Taken:

In January of 2018, the District sponsored a series of four Texas Panhandle Crop Production Clinics presented by DuPont Pioneer. The meetings took place in Dalhart on January 8, Dumas on January 9, Stratford on January 10, and Spearman on January 11. Leon New, Irrigation Engineer, presented findings from the District's 3-4-5 Gallon Production Maximization Demonstration. Other presentation topics included weed and disease management, improving efficiency in corn production, and corn rootworms.

The Master Irrigator Program entered its third year with 20 producers graduating after 24 hours of intensive irrigation conservation education. Sessions addressed agronomics, irrigation scheduling, systems, and other topics. The 2018 Master Irrigator class represented 83,766 irrigated acres and received almost \$300,000 in funding from the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS) North Plains Environmental Quality Incentives Program (EQIP) fund to implement water conservation technologies and techniques they learned in the class.

A xeriscape gardening class was held on March 24 to promote water-efficient landscaping practices. Nineteen participants attended the class at the Window on the Plains Museum in Dumas taught by Neal Hinders of Canyon's Edge Plants.

Kirk Welch taught Rainwater Harvesting 101 at the District office on October 30, with six attendees learning how to design their own rainwater harvesting system to reduce their groundwater use.

Reports on activities at the North Plains Water Conservation Center and other demonstrations and education programs were published in the spring, summer, fall, and winter issues of the North Plains Water News as well as on the District website.

The 2017 and Final Report for the 3-4-5 Gallon Production Maximization Demonstration were published on the District website in September. The data demonstrates that more irrigation does not necessarily equal more corn yield.

4. Financial Assistance

Management Objective:

The District will encourage the adoption of technologies that promote efficient use of groundwater and conserve water by providing the means to purchase the technology.

Performance Standards:

At least annually, the District will seek financial assistance for stakeholders to be used for conservation equipment and practices.

Action Taken:

In February 2018, the District applied to receive up to \$150,000 in financial assistance from the Texas Water Development Board (TWDB). The funds would be used to expand the Irrigation Conservation Initiative program, which provides for reimbursement of up to half the cost of certain approved conservation equipment. The request for funding was denied, however, the District continued administration of the following financial assistance programs:

- USDA-NRCS North Plains Environmental Quality Incentive Program – reimburses growers who have graduated from the Master Irrigator program for the cost of efficient irrigation equipment.
- TWDB Irrigation Meter Reimbursement – reimburses eligible irrigators up to half the cost of installing flow meters.
- TWDB Irrigation Conservation Initiative – reimburses up to half the cost of certain approved conservation equipment.

5. Technical Assistance

Management Objective:

The District will assist stakeholders in collecting information and knowledge about practices and technologies that promote efficient use of groundwater.

Performance Standards:

The District will provide technical assistance to stakeholders when requested, and the information is beneficial for the efficient use of groundwater.

Action Taken:

The District received inquiries for groundwater-related technical assistance and provided information to help users conserve water. Technical services performed by the District include flow tests and water quality testing. The District also partnered with the United States Department of Agriculture – Natural Resources Conservation Service to inspect variable frequency drives, which allow for more control over electric irrigation motors.

B. Controlling and Preventing the Waste of Groundwater

Management Objective:

Control and prevent the waste of groundwater as defined by State law.

Performance Standards:

The District will pursue any reported violations of the District's rules concerning groundwater waste.

Action Taken:

The District received two water waste reports in 2018. One was investigated and resolved. The other was investigated with no evidence of waste and the complaint was closed.

Table 3: Waste complaints

Water Waste Report	Description	Action	Resolution
1	Complaint of Water Waste	Investigated and notification given	Resolved
2	Complaints of Water Waste	Investigated with no evidence of waste	Closed

C. Controlling and Preventing Subsidence

Due to the depth of the water and the nature of the geology within the District, subsidence is unlikely and the District's Board of Directors, upon recommendation from qualified staff, have determined that this goal is not applicable to the District.

D. Addressing Conjunctive Surface Water Management Issues

Management Objective:

Address conjunctive water use issues with organizations that have relevant authority or jurisdiction.

Performance Standard:

Annually, District's representatives will attend at least 75% of Region A: Panhandle Regional Water Planning Group's meetings. To further address conjunctive water use issues, The District will submit a copy of its Management Plan to The Canadian River Municipal Water Authority, Palo Duro Water District, and Red River Authority for their consideration and review.

Action Taken:

The Panhandle Water Planning Group (PWPG) Full Committee held a public meeting on Friday, March 23, 2018 at 1:30 PM in the conference room of the Panhandle Regional Planning Commission (PRPC), 415 W. 8th Avenue, Amarillo, Potter County, Texas. Steve Walthour, General Manager and Danny Krienke, GMA-1 Representative participated in the meeting.

A meeting of the PWPG Executive Committee was held on Friday, March 23, 2018 at 1:00 p.m. in the PRPC conference room A, 415 W. 8th Avenue, Amarillo, Potter County, Texas. Steve Walthour, General Manager participated in the meeting.

The PWPG Agricultural Committee held a scheduled public meeting on Wednesday, August 14th, 2018 at 1:30 PM in the conference room of the PRPC, 415 W. 8th Avenue, Amarillo, Potter County, Texas. Steve Walthour, General Manager participated in the meeting.

The PWPG held a scheduled public meeting on Wednesday, August 15th, 2018 at 1:30 PM in the conference room of the PRPC, 415 W. 8th Avenue, Amarillo, Potter County, Texas. Steve Walthour, General Manager participated in the meeting.

District staff sent the 2018-2028 Proposed District Management Plan to the Canadian River Municipal Water Authority, Palo Duro Water District, and Red River Authority for their consideration and review on February 15, 2018 as documented in the final adopted plan.

E. Addressing Natural Resource Issues that Impact the Use and Availability of Groundwater and which are Impacted by the Use of Groundwater

1. Aquifer Monitoring

Management Objective:

Monitor aquifer characteristics that affect utilization and availability of groundwater and which are affected by the use of groundwater through District programs by maintaining a network of monitor wells.

Performance Standards:

- i. District staff will periodically collect and analyze water samples from appropriate monitor wells.
- ii. District staff will perform water quality analyses for select constituents for well owners upon request.
- iii. Annually, District staff will summarize their water quality activities and make the information available to the Board and the public.

Action Taken:

Water quality activities were published in the annual Hydrologic Report and presented to Board at the June 2019 board meeting. The information was also made available in the District office and on the District website.

Table 4: Mineral analyses from wells within the District

Parameter	Units	2017 Number of Analyses	2017 Average Analyses Result	2018 Number of Analyses	2018 Average Analyses Result	2019 Number of Analyses	2019 Average Analyses Result
Sulfate	mg/l	22	49.1	32	50.8	25	36.98
Nitrate	mg/l	22	12.37	32	11.14	25	1.03
Total Iron	mg/l	22	0.16	32	0.234	25	0.026
Chlorides	mg/l	22	24	32	60.77	25	12
Fluoride	mg/l	22	0.55	32	.0466	25	0.60
Total Hardness	mg/l	22	214	32	217	25	180

**Note 2019 Test results do not include analyses performed after May 31, 2019.*

- iv. District staff will collect aquifer water level measurements annually.

Action Taken:

Water levels for select District wells were measured in January and February of 2018 and reported in the Hydrologic Report.

Table 5: Depth to water by county

County	Average Depth to Water (feet)
Dallam	302
Hansford	307
Hartley	362
Hutchinson	351
Lipscomb	181
Moore	359
Ochiltree	347
Sherman	320
District-wide	316



District staff sample monitor well for water quality testing.

- v. Annually, District staff will summarize groundwater level declines and average depth to water and make the information available to the Board and the public.

Action Taken:

Groundwater level declines and average depth to water were calculated and published in the 2018 Hydrologic Report, received by the board on June 11, 2019.

Table 6: 2018-2019, Average depth to water and comparisons of average decline in select Distric water level monitor wells

County	Average Depth to Water (Feet)	2019 Average Well Decline (Feet)	2018 Average Well Decline (Feet)	Current 5-Year Avg. Well Decline (Feet)	Previous 4-Year Avg. Well Decline (Feet)	Current 10-Year Avg. Well Decline (Feet)	Previous 10-Year Avg. Well Decline (Feet)
Dallam	302	3.71	3.65	3.59	3.51	3.65	3.23
Hansford	307	2.03	2.00	1.98	1.86	1.94	1.65
Hartley	362	3.00	3.06	3.12	3.30	3.23	3.42
Hutchinson	351	1.70	1.69	1.69	1.64	1.67	1.63
Lipscomb	181	1.19	1.16	1.14	.91	.98	.75
Moore	359	2.68	2.67	2.66	2.44	2.60	1.84
Ochiltree	347	1.75	1.72	1.69	1.60	1.53	1.35
Sherman	320	3.46	3.33	3.21	2.68	2.86	2.32
District-wide	316	2.44	2.41	2.39	2.24	2.31	2.02

**The information in Table 6 is derived from analyses of monitor well hydrographs created from current and historical information. The analyses (indicating both rises and declines) may indicate the quality of information collected from a few specific wells is less than optimal. Such data may be included in the calculations of declines, depth to water or saturated aquifer formation as it represents the best, or in some cases, the only information available.*

- vi. At least on a two-year cycle, District staff will summarize or update aquifer saturated material information and make the information available to the Board and the public.

Action Taken:

Saturated thicknesses are calculated every other year and use data from District monitor wells. The next scheduled update will be published in 2021.

Table 7: 2018-2019 Estimated average aquifer thickness by county (District area only).

Dallam	Hartley	Sherman	Moore	Hansford	Hutchinson	Ochiltree	Lipscomb
161 ft.	129 ft.	137 ft.	115 ft.	158 ft.	128 ft.	134 ft.	225 ft.

2. Deteriorated Wells

Management Objective:

Investigate and address deteriorated wells that may pose a threat to water quality.

Performance Standard:

District staff will pursue repair or plugging of deteriorated wells.

Action Taken:

No deteriorated wells were reported in 2018.

3. Aquifer Information

Management Objective:

The District will provide easy access to public information available about the aquifers and wells within the District's jurisdiction.

Performance Standards:

The District will maintain a web-based application for providing information about the groundwater resources in the region.

Action Taken:

A map of all wells in the District, as well as the annual Hydrologic Report, can be seen on the District's website at www.northplainsgcd.org. The subpage for Aquifer Data & Maps had the highest number of visitors in 2018, with 1,296 page views.

F. Addressing Drought Conditions

North Plains Groundwater Conservation District lies in an area of the State of Texas that has a year-round semi-arid climate. Semi-drought conditions are experienced year-round, and the District works to educate the public about methods to conserve water all year, but particularly during dry periods.

1. Current Drought Conditions

Management Objective:

Provide information about the current drought conditions in the area.

Performance Standards:

Maintain information about the current drought conditions on the District's website.

Action Taken:

The National Drought Mitigation Center at University of Nebraska – Lincoln publishes weekly drought reports, and the District has a link to the current state drought monitor on the website at www.northplainsgcd.org.

An interactive map provides real-time water level measurements through the District's continuous well monitoring network at map.northplainsgcd.org.



2. Conservation Education

Management Objective:

Provide stakeholders with information and tools to conserve during dry and peak use periods.

Performance Standards:

Annually, the District will conduct water conservation communications and education activities.

Action Taken:

The District has coordinated the Operation Summer Showers program each summer since 2011 to equip households in the area with water-saving shower heads, a water bottle, a rain gauge, leak detecting tablets, a drip gauge, and an informational leaflet with conservation tips. Through a

partnership with seven city halls in the North Plains, 192 conservation kits were distributed in July, with the capacity to save millions of gallons of groundwater. Drought conditions and water conservation tips were also communicated through the District's social media accounts and website.

G. Conservation, Recharge Enhancement, Rainwater Harvesting, Precipitation Enhancement, and Brush Control, Where Appropriate and Cost-Effective

1. Conservation

a) Groundwater Conservation Reserve Program

Management Objective:

Provide program allowing permitted well owners that timely report their groundwater production to retain any unused allowable annual production for future years, promoting the conservation of groundwater.

Performance Standards:

Annually, District staff will report to permitted well owners the well owner's conservation reserve.

Action Taken:

The District reported cumulative and available groundwater conservation reserve to each non-exempt well owner, or the well owner's agent, as part of 2897 Annual Allowable Production reporting forms on November 30, 2018 for production year 2018.

b) Conservation Education

Management Objective:

Conduct conservation education activities to encourage water conservation and create informed and educated citizens who will be dedicated stewards of their resources.

Performance Standards:

Annually, the District will disseminate groundwater conservation and waste prevention information through a variety of media, activities, and events.

Action Taken:

The District's conservation education activities reached thousands of stakeholders of all ages in 2018. From newsletters delivered to a list of over 2000 emails and 1000 snail mail boxes, to social media posts viewed around the world, North Plains Groundwater Conservation District's outreach methods include a variety of strategies and topics to show residents the value of water and help them conserve this precious resource.

Now in its third year, Master Irrigator has become the District's signature educational event, with 68 total graduates representing 213,535 acres at the conclusion of the 2018 class. The State of Texas recognized Master Irrigator with a 2018 Texas Environmental Excellence Award in the agriculture category. The award is the highest environmental honor in the state.



2018 Master Irrigators graduating class.

Table 8: District conservation outreach activities

Date	Event	Attendance
March-April	Master Irrigator – intensive irrigation conservation class for agricultural producers, taught by experts	20
March 24	Xeriscaping Class – gardening expert Neal Hinders taught participants about drought-tolerant plants	19
April 17	Dumas Water Festival – fourth grade students learned about water conservation through a full day of interactive activities	395
April 18	Dalhart Water Festival – fourth grade students learned about water conservation through a full day of interactive activities	253
April 19	Perryton Water Festival – fourth grade students learned about water conservation through a full day of interactive activities	338
October 30	Rainwater Harvesting 101 – Kirk Welch introduced participants to the principles of capturing rainfall	6
November-December	Tips & Sips – continuing education for teachers following the Project WET curriculum	7

One of the most effective educational strategies employed by the District is cultivating partnerships with other entities to amplify events. The District sponsored and presented at the DuPont Pioneer Texas Panhandle Crop Production Clinics in January in Dalhart, Dumas, Stratford, and Spearman. At each of these meetings, Retired Ag Engineer Leon New delivered presentations regarding results of the 3-4-5 Gallon Production Maximization demonstration and updates on other District programs.

In February, the District was a key sponsor of the bi-annual Panhandle Water Symposium hosted at the Amarillo Civic Center for a regional audience. The District also provided support to a well screening event hosted by the Texas Well Owners Network, the Texas Alliance for Groundwater Districts' annual Texas Groundwater Summit, and Moore County Ag Days presented by Texas Farm Bureau.

Educational opportunities exist wherever people are. For that reason, the District's outreach team attends several community events to spread water conservation information. In 2018 the District had a presence at the Dumas/Moore County Chamber of Commerce Banquet in Dumas, XIT General Office Cowboy Christmas in July in Channing, XIT Rodeo & Reunion in Dalhart, Wheatheart of the Nation Block Party in Perryton, and the Windmill Music Festival in Spearman.

With 832 Twitter followers, 459 Facebook fans, and 195 Instagram followers, the District is able to share information, water conservation tips, and groundwater-

related content to our stakeholders with the click of a button. Posts have resulted in thousands of interactions and have proven to be useful in keeping stakeholders informed.



The District crew during a break while volunteering to operate drink stands at the XIT Rodeo and Reunion in Dalhart.

In 2018, District personnel were invited to every elementary school in Dumas to conduct a soil porosity lab with 4th grade students. In the activity, students learned how groundwater moves through different soil types and received information on water conservation.

By offering educational presentations free of charge to schools and civic groups, the District helps create the next generation of water stewards. Steve Walthour, District General Manager, gave presentations at local Rotary and Lions club meetings upon request.

The District has coordinated the Operation Summer Showers program each summer since 2011 to equip households in the area with water-saving shower heads, a water bottle, a rain gauge, leak detecting tablets, a drip gauge, and an informational leaflet with conservation tips. Through a partnership with seven city halls in the North Plains, 192 conservation kits were distributed in July, with the capacity to save millions of gallons of groundwater.



Elementary students conduct a soil porosity lab with direction from the District's conservation outreach team.

c) Conservation Rule Compliance

Management Objective:

Monitor and enforce compliance to District Rules

Performance Standards: The District staff will report the enforcement to the Board as needed.

Action Taken:

Action Taken: 2897 Production Report Forms were sent to non-exempt groundwater producers in the District on November 30, 2018. 2880 reported groundwater use within the Annual Allowable Production limit in a timely manner. Of the 17 who over-produced, 10 were administratively resolved and 5 paid fines and/or installed meters. Two were pending at the time of this report.

Table 9: Compliance stats for 2018

In Compliance 2018	Over Production Limit	Administratively Resolved	Fine Paid/Meters Installed	Pending
2880	17	10	5	2

A compliance matter is only considered an enforcement action if administrative remedies have been exhausted and the person is required to appear before the Board of Directors. Only one issue came before the Board in 2018. The details of the case are as follows:

On October 9, 2018, the Board conducted a formal show cause hearing regarding a farm that was allowing groundwater pumped for irrigation to escape as irrigation tailwater onto land other than that of the owner. This is a violation of District Rule 9. On November 13th, the Board ordered that the violator immediately cease and desist from committing waste by permitting groundwater being produced from the property to escape the property as irrigation tailwater. The Board ordered the violator to pay costs to the District, on or before, thirty (30) days after the effective date of this Cease and Desist Order. The violator complied with the order.

d) Recharge Enhancement

The District has limited surface water resources to effectuate enhanced recharge through diversion or infiltration of surface water. The District explored recharge enhancement through its precipitation enhancement program, and the District discontinued funding for the program in 2006. The District could not quantify if, and to what extent, the program positively affected recharge or groundwater use in the District. The Board of Directors determined recharge enhancement through surface water diversion, infiltration, or precipitation enhancement is not currently viable or practical. For this management plan, this goal is not applicable to the District.

2. Rainwater Harvesting

Management Objective:

The District promotes rainwater harvesting by maintaining rainwater harvesting information at the District office and provides literature about its benefits at a public meeting held at least once annually.

Performance Standards:

Annually, District staff will report to the Board of Directors the number of people who attended the rainwater harvesting meetings.

Action Taken:

Kirk Welch taught Rainwater Harvesting 101 at the District office on October 30 to show participants how to design their own rainwater harvesting system to reduce their groundwater use. The class was advertised on social media, flyers at local gardening shops, and the District website. Six residents attended the class.

3. Precipitation Enhancement

The District discontinued its funding for the precipitation enhancement program in 2006. The District could not quantify if, and to what extent, the program positively affected recharge or groundwater use. The Board of Directors determined that precipitation enhancement is not currently viable or practical. For this management plan, this goal is non-applicable to the District.

4. Brush Control

The District has a semi-arid climate, has very little surface water, experiences low annual rainfall and has a depth to groundwater exceeding 300 feet. Considering the District's low rainfall, depth to groundwater and lack of surface water resources; brush control as a form of recharge enhancement or groundwater conservation is not practicable or effective. The District has determined that brush control is not a viable groundwater conservation goal for this area and is therefore non-applicable.

H. Addressing the Desired Future Conditions

1. Compare DFCs to Aquifers' Conditions

Management Objective:

Monitor the condition of the aquifers and status of groundwater production compared to the adopted DFCs.

Performance Standards:

Annually review groundwater production information, GAMs, and water level measurements to characterize aquifer conditions compared to the DFCs.

Action Taken:

Texas law requires groundwater conservation districts to adopt aquifer desired future conditions (DFC's), create a 50-year management plan and adopt rules to achieve those DFC's. In adopting DFC's, creating management plans and adopting rules, Texas law also requires districts to use estimates of modeled available groundwater (MAG) from the Texas Water Development Board (TWDB). The MAG's are also used to monitor the progress in attaining the District's DFC's. The table below shows the average groundwater production from 2014-2018 and 2018 groundwater production compared to the current estimated Modeled Available Groundwater from the Ogallala, Rita Blanca and Dockum aquifers (GAM RUN 16-029 MAG).

Table 10: Production compared to MAG

County	2020 MAG	2018 Production	2018 Percent Difference between MAG and Production	Average Production 2014-2018	Average Percent Difference between MAG and Production 2014-2018
Dallam	401,663	349,900	-12.88%	338,420	-15.74%
Hartley	409,187	422,600	3.27%	393,000	-3.95%
Moore	219,654	200,600	-8.67%	185,220	-15.67%
Sherman	398,183	312,000	-21.64%	295,100	-25.88%
Hansford	275,016	190,800	-30.62%	173,680	-36.84%
Hutchinson	62,803	75,500	20.21%	67,700	7.79%
Lipscomb	266,809	44,200	-83.43%	43,780	-83.59%
Ochiltree	243,778	95,500	-60.82%	87,580	-64.07%
West	1,428,687	1,285,100	-10.05%	1,241,400	-13.10%
East	848,406	406,000	-52.14%	374,080	-55.90%
Total	2,277,093	1,691,100	-12.55%	1,615,480	-29.05%

2. Joint Planning**Management Objective:**

The District will participate in the joint planning process of the Groundwater Management Area 1 with other groundwater conservation districts.

Performance Standards:

A District representative will participate in each GMA-1 joint planning meeting.

Action Taken:

The Groundwater Management Area Number 1 (GMA-1) met on Tuesday, October 23, 2018 at 2:00 p.m. in the PRPC conference room, 415 SW 8th Avenue, Amarillo, Potter County, Texas. The following North Plains representatives were in attendance: Bob Zimmer, Joint Planning Representative and Steve Walthour, General Manager.

I. Other Management Goals Included in The Plan by The District

No other management goals are listed at this time.

DISTRICT FINANCIALS

For the fiscal year ending September 30, 2018, the District's net financial position increased by \$0.28 million, or nearly 7.16%, because of 2017 District operations. During the year, the District had expenditures that were \$0.28 million less than the \$2.72 million generated in tax and other revenues for District programs. The total cost of all the District's programs and activities after charges for services and operating grants was \$2.05 million.

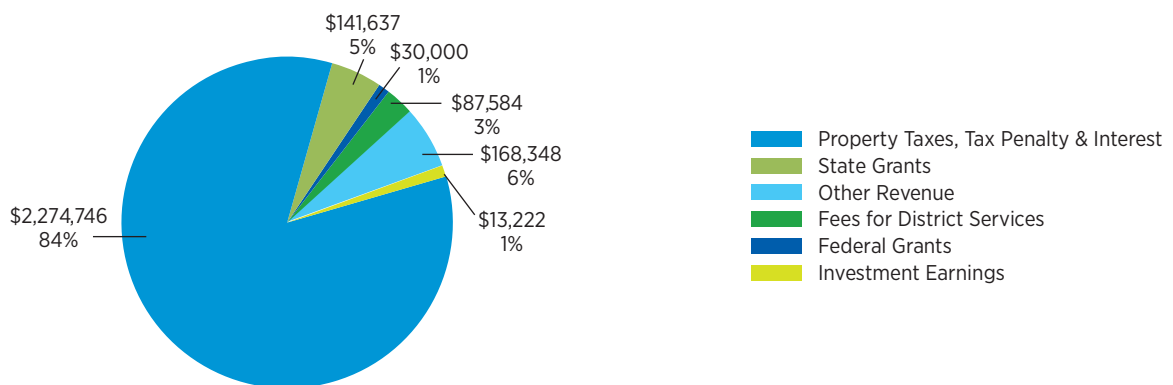
The cost of all governmental activities this year was \$2.44 million. However, our taxpayers ultimately paid only \$2.05 million because some of the costs were paid by those who directly benefited from the programs (\$0.21 million) or by grants the District acquired at the direction of the Board (\$0.17 million) that subsidized certain conservation programs.

The District completed the year with a fund balance of \$2.03 million, which is up from the previous year's balance of \$1.74 million.

At the end of the fiscal year the District had \$2.40 million invested in a broad range of capital assets including facilities and equipment for water conservation. The amount represents a net decrease of just over \$0.09 million or 3.45 % less than last year.

The following charts show the District's revenues and other financing sources, as well as the District's expenditures for the fiscal year ending September 30, 2018.

Revenues and Other Financial Sources



Total Expenditures

