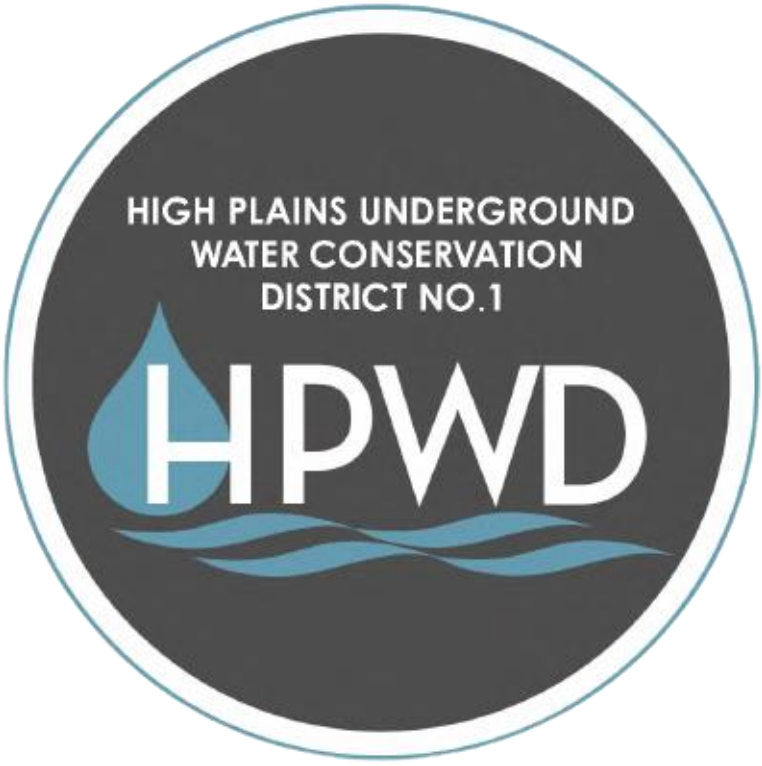


2022 Annual Report

High Plains Underground Water Conservation District No. 1
2930 Avenue Q
Lubbock, Texas 79411-2499

hpwd.org

CONTENTS

High Plains Underground Water Conservation District No. 1

The District strives to conserve, preserve, and protect the groundwater resources of the Ogallala, Dockum, and Edwards-Trinity (High Plains) Aquifers within its 16-county service area.

HPWD consists of all of Bailey, Cochran, Hale, Lamb, Lubbock, Lynn, Parmer, and Swisher Counties, and parts of Armstrong, Castro, Crosby, Deaf Smith, Floyd, Hockley, Potter, and Randall Counties. The district's service area is approximately 11,850 square miles.

The purpose of HPWD, as required by Chapter 36 of the Texas Water Code, is to provide for conserving, preserving, protecting, recharging, and preventing the waste of underground water.

HPWD has developed its management philosophy and resulting management strategies to: 1) protect property rights; 2) utilize the best available science to balance the conservation and development of groundwater; and 3) meet the management goals and desired future conditions of aquifers of the District.

The HPWD Board of Directors adopted the original management plan on August 11, 1998. The plan was later amended on these dates:

- January 29, 2004
- February 10, 2010
- July 19, 2011
- August 12, 2014
- September 10, 2019

This document contains management goals, performance standards, and responses to the performance standards for FY 2022. **It is from October 1, 2021, to September 30, 2022.**

HPWD expresses its appreciation to its management and staff for their careful documentation of program data and assistance in compiling this annual report.

The High Plains Underground Water Conservation District No. 1 Board of Directors reviewed and approved this annual report at their January 10, 2023, regular meeting in Lubbock, TX.

BOARD OF DIRECTORS

Dan Seale	Member	Precinct One District Director	Lubbock, TX
Brad Heffington	Vice President	Precinct Two District Director	Littlefield, TX
Tony Beauchamp	Member	Precinct Three District Director	Lazbuddie, TX
Lynn Tate	President	Precinct Four District Director	Amarillo, TX
Ronnie Hopper	Secretary-Treasurer	Precinct Five District Director	Petersburg, TX

DISTRICT STAFF

Jason Coleman, P.E.	General Manager
Tammy Anderson	Accountant
Billy Barron	Field Technician Supervisor
Nathaniel Bibbs	Field Technician
Mackenzie Bolton	Communications Intern (Canyon)
Stephanie Brady	Communications Director
Liz Casias	Receptionist/Administrative Assistant
Ray Eads	Field Technician (*Canyon*)
Lance Epperson	Field Technician
Mark Hamilton	Field Technician
Jed Leibbrandt	GIS Specialist
Jennifer McClendon	Accounting Assistant/Permitting
Juan Peña	Permit Supervisor
Vance Porter	Field Technician
Gray Sanders	Information Technology/Permit Administrator
Robert Triggs	Field Technician
Andres Villarreal	Field Technician

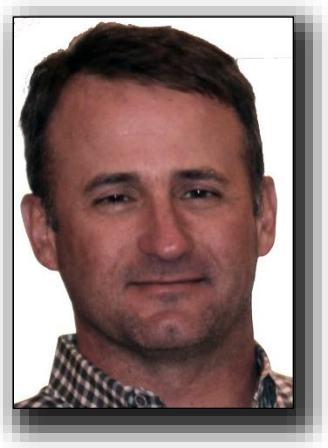
COUNTY ADVISORY COMMITTEES

A County Advisory Committee from each of the 16 counties is appointed to serve a one-year term by the District's Board of Directors. The County Committees make recommendations for needed rule revisions and water conservation programs/activities to the Board. In addition, they serve as a liaison between the Board and residents of their local communities. To see a current list of County Committee Members, go to https://map1.hpwd.org/precinctmap.html.

MANAGER'S MESSAGE – Jason Coleman, P.E.

This annual report is a brief summary of the programs and activities conducted during the 2022 fiscal year.

Most of the content is related to the objectives contained in the district management plan. Chapter 36 of the Texas Water Code specifies the goals which a groundwater conservation district (GCD) must address in the management plan.



HPWD conducted all programs and activities for the 2022 fiscal year at a total cost of about $2.7 million. About $2.5 million of the district's revenue for FY2022 was property taxes.

All bills and monthly financial reports for the district are available on the HPWD website (**www.hpwd.org**). The public has access to the information presented during each board meeting using the "Agendas and Minutes" link on the website.

The HPWD Board and staff spent considerable time this past year deliberating the ways that we may establish relationships with domestic water well owners. After three months of discussion, the board waived all well registration fees at the regular meeting on September 13, 2022, and also voted to promote well registration for exempt domestic water wells. This waiver is effective for one year.

HPWD also participated in three Dockum Aquifer Partnerships in FY 2022. These projects were conducted in Crosby and Floyd Counties.

The biggest changes for HPWD during the past year were all staff-related. In October, Education and Outreach Coordinator, Katherine Drury, left HPWD to pursue another career. In February, Carmon McCain suddenly passed away. Carmon served HPWD for almost 35 years in information and education. In May, Field Staff Supervisor, Keith Whitworth, retired. Keith worked with HPWD for over 44 years.

New staff members include two field technicians, an assistant for accounting/permitting, and a communications director. These members are listed in our staff directory.

Your comments and questions about HPWD programs are always welcome. Please contact us at (806) 762-0181.

ANNUAL REPORT OF ATTAINMENT OF GOALS 2022

GOAL 1: PROVIDING THE MOST EFFICIENT USE OF GROUNDWATER

Management Objective 1.1 – Monitor Water Levels

Water level measurements are vital to the study of the aquifers within the High Plains Water District (HPWD). Field staff makes these measurements each winter, during which time most of the irrigation usage is at a minimum.

Performance Standards

1.1a Number of wells measured each year.

There were 1,380 wells measured. Of these, 1,290 are Ogallala Aquifer wells, 58 are Edwards-Trinity (High Plains) Aquifer wells, and 32 are Dockum Aquifer wells.

1.1b Number of wells District staff are unable to measure each year.

Approximately 24 Ogallala Aquifer wells were unmeasurable in 2022. Publishable measurements are not obtained when wells are in use, the well has been plugged, the well is winterized, or accessibility is prohibited by other circumstances.

1.1c Number of new wells added to the network of observation sites each year.

HPWD Field Staff added 9 new to the observation well network in 2022. There were 17 wells dropped from the observation well network in 2022.

1.1d Construct maps illustrating the yearly changes in water levels.

District staff updated the annual changes in depth-to-water and saturated thickness in wells within the district's observation well network. These data are available for online viewing at **map.hpwd.org**. Dockum Aquifer data are available for viewing at **dockumstudy.hpwd.org**

1.1e Maintain continuous water level monitoring transducers in at least 10 water wells.

There are 49 continuous water level monitoring transducers installed/maintained in wells within the district. Changes in global communications for 3G Networks occurred in 2022, and have posed numerous challenges for us to maintain reliable data records. All available data is presented on the HPWD interactive web map.

Management Objective 1.2 – Monitor Saturated Thickness

Saturated thickness represents the aquifer section where groundwater pumping occurs. Water users should be aware of changes in saturated thickness.

Performance Standards

1.2a Once per year, calculate saturated thickness for Ogallala and Edwards-Trinity (High Plains) water level observation wells that have a log of well construction.

County	Number of Observation Sites With Log of Construction	Average Saturated Thickness from Observation Wells
Armstrong	9	36
Bailey	73	64
Castro	83	54
Cochran	47	40
Crosby	21	84
Deaf Smith	85	61
Floyd	88	65
Hale	48	58
Hockley	74	39
Lamb	92	49
Lubbock	93	58
Lynn	60	50
Parmer	97	47
Potter	6	54
Randall	36	53
Swisher	53	45

1.2b Provide saturated thickness data via the District website.

The "Aquifer Info" tool on the **interactive map** provides estimates of saturated thickness in the Ogallala/ETHP Aquifer. The District has also created and provided a shaded contour map for the whole service area on its **website**.

Management Objective 1.3 – Technical Field Services

The District is frequently asked to measure well capacities. A variety of tools are used by District staff for this service. These may include ultrasonic flow meters, e-lines, and other instruments.

Performance Standards

1.3a Number of flow tests performed by District staff each year.

1,095 tests were conducted in 2022. This includes 980 water wells and 115 irrigation systems. This includes Irrigation Assessment Program participants.

1.3b Number of flow tests performed by the public using the metering equipment loaned to water users.

HPWD loaned out flow meters two (2) times during the year. Multiple wells may have been monitored with these flow meters.

1.3c Number of water level measurements performed for individual well owners.

There were 1,148 water level measurements made for individual well owners in Fiscal Year 2022. Of these, 420 were for the Irrigation Assessment Program. The remaining 728 measurements were for individual landowners/operators.

Management Objective 1.4 – Irrigation Assessment Program

Agricultural irrigation comprises the majority of groundwater usage within the District. For this reason, it is important that the District understand the patterns of usage on different crops. Using a network of cooperators, the District should monitor application amounts and crop types.

Performance Standards

1.4a Number of sites enrolled in the district's irrigation assessment program each year.

There are 120 sites covering 16,860 acres of land.

1.4b Document the types of crops being irrigated each year.

Corn, cotton, grain sorghum, forage sorghum, and wheat are the primary irrigated crops in 2022. There are also alfalfa, pumpkins, triticale, and sunflowers.

1.4c Document the irrigation methods being utilized each year.

There are currently 14,807 acres with pivot irrigation and 2,053 acres with subsurface drip irrigation enrolled in the Irrigation Assessment Program.

Management Objective 1.5 – Data Availability

The District should provide the best available hydrologic information to water users of the District. This information should be usable on a variety of platforms, such as electronic or print. Timeliness of delivery and ease of access are also critically important.

Performance Standards:

1.5a Once per year, summarize and describe new/improved data tools.

The aquifer bore tool was revised to include estimated 5-year and 10-year water level changes.
The full history of the water level data was added to the observation well chart.
The Dockum Aquifer study map was updated so that new data is always displayed.

1.5b Once per year, summarize and describe existing data tools.

The online map allows the public to view well locations and download associated documents. This includes permits, driller logs, and geophysical logs. The annual water level observation wells include a chart of tabular data, as well as a graphical representation of water levels and saturated thickness. The Well Spacing Guide allows users to estimate a desired drilling location based on the District's well spacing rules. The "Aquifer Info" tab allows persons to access a "virtual bore" for any location within the HPWD service area. This includes the saturated thickness of the aquifers and the depth and thickness of the formations.

1.5c Once per year, inventory all data tools available to the public.

Interactive map

- well permit applications
- drillers' logs
- well spacing guide
- aquifer information tool
- annual water level observations
- geophysical logs
- daily water level observations
- contours of saturated thickness, the base of aquifer elevation, and water table elevation

Dockum study map

- water quality tests
- flow tests
- depth to water
- geophysical logs
- drillers' logs
- permitted/registered well locations

Well yield calculator (predicted well yields based on declining water levels)

Management Objective 1.6 – Irrigation System Inventory

As groundwater availability changes, it is expected that the amount of irrigated acreage will change as well. Monitoring this change may be accomplished using remote imagery or other tools.

Performance Standards:

1.6a Once per year, document the number of irrigation systems within the District.

There are approximately 14,056 center pivot systems and 5,794 subsurface drip irrigation systems in operation within the district.

1.6b Once per year, calculate acreage covered by the irrigation systems.

There are approximately 2,250,058 irrigated acres within the district. This includes 1,791,640 acres irrigated with center pivots and 458,418 acres irrigated with subsurface drip irrigation.

GOAL 2: CONTROLLING AND PREVENTING WASTE OF GROUNDWATER

Management Objective 2.1 – Well Permitting and Well Completion

HPWD issues permits for water wells expected to produce 17.5 gallons per minute or more.

Performance Standards:

2.1a Number of water well permits issued by aquifers each year.

AQUIFER	2021	2022
Dockum Aquifer	55	78
Edwards-Trinity (High Plains) Aquifer	3	5
Ogallala Aquifer	904	1173
TOTAL	**962**	**1256**

2.1b Production categories of well permits issued.

DOCKUM AQUIFER		
Maximum Production	**2021**	**2022**
70 gallons per minute	0	1
165 gallons per minute	0	1
265 gallons per minute	8	4
500 gallons per minute	44	67
> 500 gallons per minute	3	5
TOTAL	**55**	**78**

OGALLALA/EDWARDS-TRINITY (HIGH PLAINS) AQUIFER		
Maximum Production	**2021**	**2022**
Under 17.5 gallons per minute	0	4
70 gallons per minute	246	270
165 gallons per minute	398	512
265 gallons per minute	126	213
390 gallons per minute	74	111
560 gallons per minute	62	65
800 gallons per minute	0	1
> 800 gallons per minute	1	2
TOTAL	**907**	**1178**

Management Objective 2.2 – Open, Deteriorated, or Uncovered Wells

Open, deteriorated, or uncovered wells pose a threat to groundwater quality as well as human/animal safety. A staff member may discover such a well during routine fieldwork, or the office may receive notice of the same from a member of the public.

Performance Standards:

2.2a Number of open, uncovered or deteriorated wells reported each year. 54

2.2b Number of well caps provided to cover open wells each year. 18

2.2c Number of open, uncovered, deteriorated wells that were capped, closed, or repaired in accordance with district rules each year. 43

Management Objective 2.3 – Waste of Groundwater

Waste of groundwater is typically reported to the District office by a member of the public, but may also be discovered by a staff member conducting routine field work. Since waste is prohibited by state law, these reports are investigated by staff, and the corresponding well owner is notified of the wasteful practice.

Performance Standards:

2.3a Number of water waste reports investigated by district staff each year.

There were nine (9) reports of waste in 2022. Each was contacted by HPWD staff and resolved with the owner's cooperation.

2.3b Number of newsletter articles addressing water waste prevention each year.

MONTH	ARTICLE HEADLINE
November 2021	"Most Americans unaware of daily water consumption"
November 2021	"Mining water use study in progress: Did You Know?"
January 2022	"California Drought Prompts Emergency Regulations"
January 2022	"Most Americans unaware of daily water consumption"
January 2022	"EPA committee offers WOTUS recommendations"
February 2022	"Is Your Toilet Wasting Water? When Was the Last Time You Replaced Your Toilet Flapper?"
July 2022	"Water on the High Plains: Details, Drought and the Day-to-Day"
July 2022	"The Odessa water outage underscores a growing problem: Aging pipes in Texas cities are getting more fragile"
August 2022	"Around 800 warnings given out this year so far for Lubbock water restrictions"
September 2022	"New study shows water loss is a major issue in Texas"
September 2022	"How Much Should I Water My Yard"

GOAL 3: CONTROLLING AND PREVENTING SUBSIDENCE – Not Applicable

Using the TWDB subsidence predictor tool, we performed analysis for selected water level observation wells. The transient predictions ended at the year 2070. Minimum predicted subsidence values were about 0.15 feet, while the maximum predicted subsidence values were about 0.70 feet. We also reviewed the TWDB report, "Identification of the Vulnerability of the Major and Minor Aquifers of Texas to Subsidence with Regard to Groundwater Pumping." The District concluded that this goal is not applicable to the operation of the District.

GOAL 4: CONJUNCTIVE SURFACE WATER MANAGEMENT ISSUES

Management Objective 4.1 – Coordination with Surface Water Management Agencies

There are very limited surface water resources in the District. Attending Regional Water Planning Group (RWPG) meetings within HPWD will ensure that the District stays current with issues that affect surface water agencies in the region.

Performance Standards:

4.1a Number of RWPG meetings attended by staff each year.

HPWD Staff attended three Region O meetings that occurred during FY2022: November 17, 2021, March 3, 2022, and September 20, 2022.

GOAL 5: NATURAL RESOURCE ISSUES

Management Objective 5.1 -- Monitor Water Quality

Water quality affects many different user groups within HPWD. The amount of total dissolved solids (TDS) in groundwater is of primary importance as a screening tool for assessing water quality. HPWD has several tools available for conducting this measurement.

Performance Standards:

5.1a Document the aquifer(s) being sampled.

The Dockum Aquifer was included in the Dockum Aquifer Study; the Edwards-Trinity (High Plains) Aquifer was included in the Edwards-Trinity (High Plains) Study; and the Ogallala Aquifer was included in the annual Irrigation Assessment Program.

5.1b Number of wells sampled each year.

AQUIFER	WATER SAMPLES TAKEN PER YEAR
Dockum Aquifer	66
Edwards-Trinity (High Plains) Aquifer	0
Ogallala Aquifer	22
Irrigation Systems	23
TOTAL	**111**

5.1c Document the type of sampling methods.

Water quality samples were gathered for analysis using grab samples at well sites. In addition, In-Situ Aqua TROLL transducers measured water levels, pressure, conductivity, and temperature.

GOAL 6: DROUGHT CONDITIONS

Management Objective 6.1 – Ongoing and Relevant Drought Information

Every week on Thursdays, a drought map is published on social media. A link to current drought information is published monthly in the Cross Section newsletter. Drought awareness helps water users understand the level of conservation required to meet a particular need. The Texas Water Development Board (TWDB) has a very useful website for drought information, which is http://www.waterdatafortexas.org/drought

Performance Standards:

6.1a Number of drought-related articles provided to the public each year

According to unofficial National Weather Service data, Amarillo received 16.4 inches of

precipitation and Lubbock received 15.06 inches of precipitation in calendar year 2022. The normal values are 20.36 inches for Amarillo and 19.12 inches for Lubbock. The departure from normal for Amarillo was – 3.96 inches while the departure from normal for Lubbock was - 4.06 inches.

MONTH	ARTICLE HEADLINE
Oct. 2021– Sept. 2022	Monthly Drought Monitor Maps in print & e-newsletter.
Oct. 2021 – Sept. 2022	33 Social Media posts with drought-related topics. Since May 19, 2022, a drought map is posted every Thursday morning.
October 2021	"Warmer temps, extreme rainfall likely by 2036"
October 2021	"2011 Drought Worse Than Thought"
October 2021	"High Tech Buoys Measure Evaporation"
October 2021	"Warmer temps, extreme rainfall likely by 2036"
December 2021	"Dry Winter Boosts Drought in Region"
January 2022	"TAWC Water College Held January 20"
January 2022	"California Drought Prompts Emergency Regulations"
January 2022	"AgriLife Research: Minnow Populations May Signal Future Drought Conditions"
June 2022	"Texas drought strengthens its grip, triggering wildfires, water restrictions and crop disasters"
June 2022	"Lubbock County water woes call for inventive conservation"
July 2022	"Water on the High Plains: Details, Drought and the Day-to-Day"
July 2022	"West Texas Farmers and Ranchers Fear Worts as Drought Heat near 2011 Records."
July 2022	"Farmers look for late-season planting options"
July 2022	"Drought and trees – explained"
July 2022	"The Odessa water outage underscores a growing problem: Aging pipes in Texas cities are getting more fragile"
August 2022	"Plot tour with Wenwei Xu, Ph.D. - Halfway, TX"
August 2022	U.S. Seasonal Drought Outlook (until Oct. 31, 2022)
August 2022	"Record Hot July In Texas And Nation's Third Hottest Month, NOAA Says"
August 2022	"West Texas crops suffering from prolonged drought"
August 2022	"West Texas farmers claiming insurance as drought dries up cotton crop"
August 2022	"Texas drought reaches 10-year peak, no rain in sight for the South Plains"
August 2022	"6 Ways to conserve water in the summer heat"
August 2022	"The Ogallala Aquifer: When will the wells run dry? What then?"
September 2022	"Texas A&M AgriLife Annual North Region Regional Issues Retreat"
September 2022	"Drought conditions putting added strain on Ogallala Aquifer"
September 2022	"Expert stress importance of Farmers in Water Conservation Efforts"

September 2022	"Drought conditions improve in Texas but intensify in other areas of the Plains"
September 2022	"Testimony before the Texas House Natural Resources Committee Public Hearing to 'Examine the State's Groundwater Management Policy and Regulatory Framework'"
September 2022	"Texas' heat index could reach 125 degrees over the next 30 years, study finds"
September 2022	"Texas' cotton industry is facing its worst harvest in years - costing the state more than $2 billion"
September 2022	"New study shows water loss is a major issue in Texas"

6.1b Number of rainfall maps provided to the public each year.

West Texas Mesonet Rainfall Totals, as well as historic rainfall data for both Amarillo and Lubbock, are available on the district's website **here**.

GOAL 7: CONSERVATION, RECHARGE ENHANCEMENT, RAINWATER HARVESTING, PRECIPITATION ENHANCEMENT, OR BRUSH CONTROL, WHERE APPROPRIATE AND COST-EFFECTIVE

Management Objective 7.1 – District Newsletter

HPWD will produce a newsletter (*"The Cross Section"*) and distribute it to area residents and other interested parties. Articles discussing methods to conserve and preserve groundwater quality and quantity will be included.

Performance Standards:

7.1a Once per year, document the number of newsletter subscribers.

There are 2,593 electronic version subscribers and 632 print version subscribers at the end of Fiscal Year 2022.

7.1b Document the number of electronic/print newsletters produced each year.

There were 11 electronic issues and 4 print issues produced/distributed during the 2022 Fiscal Year.

7.1c Document the number of articles addressing conservation practices published each year.

There were 30 articles addressing conservation practices in Fiscal Year 2022.

MONTH	NEWSLETTER ARTICLE HEADLINE
October 2021	“New tools aid playa basin management decisions”
October 2021	“High-tech buoys measure evaporation”
October 2021	“Hydropanels create drinking water”
October 2021	“TWDB Rain Catcher Award winners”
October 2021	“On-Farm recharge”
November 2021	“Most Americans unaware of daily water consumption”
December 2021	“Ag Conservation Easement Program”
January 2022	"Playas: The Land of Little Lakes"
January 2022	"Cover Crops Play Important Role in Resilient Agriculture"
January 2022	“Agricultural Water Conservation Grant Funding”
January 2022	“USDA-NRCS Announces $225 Million in RCPP Funding”
February 2022	“Is Your Toilet Wasting Water? When Was the Last Time You Replaced Your Toilet Flapper?”
February 2022	"6th Biennial Water Conservation Symposium"
March 2022	"Speaker Dade Phelan Issues Interim Charges"
June 2022	"Lubbock County Water Woes Call for Inventive Conservation"
June 2022	“Ogallala Commons Stewarding Our Aquifer Field Day”
June 2022	“Panhandle Families Garner Lone Star Land Steward Awards”
June 2022	“Healthy Playas Ensure Clean Recharge to Ogallala Aquifer”
July 2022	“Workshops Connect Texas Landowners to Conservation Tools and Resources”
July 2022	“Urban Agricultural Grant Application Now Open”
July 2022	“Water on the High Plains: Details, drought, and the day to day”
August 2022	“Autumn provides opportunities for home water conservation”
August 2022	“Ogallala Commons Playa Field Day - Panhandle, TX"
August 2022	“Plot tour with Wenwei Xu, Ph.D. - Halfway, TX”
August 2022	“Around 800 warnings given out this year so far for Lubbock water restrictions”
August 2022	“6 ways to conserve water in the summer heat”
August 2022	“Troubled Waters: Who owns groundwater, surface water, and the rain”
August 2022	"What is 'xeriscaping'? Growing trend could save time, water and money"
September 2022	“Expert stress importance of Farmers in Water Conservation Efforts”
September 2022	“Inflation Reduction Act increases agricultural conservation program funds”

Management Objective 7.2 – News Releases

HPWD will prepare news releases about water conservation practices and other relevant subjects for distribution to print media, electronic media, and other interested parties.

Performance Standards:

7.2a Number of news releases sent to media and other interested parties each year.

There were 9 **news releases** produced and distributed to the media in Fiscal Year 2022.

7.2b Number of news releases addressing conservation practices each year.

There was 1 news release produced and distributed to the media in Fiscal Year 2022.

MONTH	NEWS RELEASE
April 2022	"HPWD Accepting RFPs for Research & Demonstration Projects"

Management Objective 7.3 – Radio Announcements

HPWD will distribute pre-recorded 60-second radio announcements about water conservation practices and other subjects to stations within the district.

Performance Standards:

7.3a Document the number of radio announcements produced each year.

One radio announcement was produced for the annual water level measurements beginning in January. That announcement was run approximately 191 times.

Management Objective 7.4 – Public Presentations

HPWD representatives will present information about water conservation practices, district programs and activities, and other subjects to civic clubs, professional organizations, and other interested parties.

Performance Standards:

7.4a Number of public presentations delivered each year.

HPWD Staff delivered 14 public presentations. (see 7.6b)

Management Objective 7.5 – Conservation Research

The District will seek opportunities to participate and partner with other groups conducting water conservation research and development.

Performance Standards:

7.5a Once per year, document the number of water conservation research projects in which the District participates.

PROJECT	AWARDED
"Development of Stress-Tolerant Specialty Corn Genetics – Year 3"	$ 30,000
"Plant based polymers as effective treatment agents in removal of microplastics, dissolved solids and ions from underground water"	$ 28,860
"Ogallala Commons Playa Field Days & Festivals"	$ 10,000
TOTAL	**$ 68,860**

7.5b Number of newsletter articles describing the research projects each year.

MONTH	NEWSLETTER ARTICLE HEADLINE
February 18, 2022	"March 10 Ogallala Commons Field Day"
June 21, 2022	"May 17 Ogallala Commons Stewarding Our Aquifer Field Day"
June 21, 2022	"Texas A&M AgriLife Extension 4H Water Ambassadors"
July 14, 2022	"HPWD Research and Demonstration"
August 16, 2022	"Ogallala Commons Playa Field Day – Panhandle, TX"
August 16, 2022	"Plot tour with Wenwei Xu, Ph.D. - Halfway, TX"

Management Objective 7.6 – Public Information

District staff will provide general water conservation information at suitable venues within the District each year. This may include exhibits at farm shows and information tables with publications at other meetings.

Performance Standards:

7.6a Document venues at which water conservation information is provided. (See table below)

7.6b Estimate the attendance at each venue. (See table below)

DATE	VENUE	ATTENDANCE	PRESENTER
10/8/2021	Xylem Staff	90	Drury
10/11/2021	Playa Festival – All Saints	75	Drury
10/13/2021	Playa Festival Whiteface	60	Drury
10/20/2021	Slaton Quest	15	Drury
11/5/2021	TTU Water Law Symposium	70	Coleman
11/30-12/2/2021	Amarillo Farm and Ranch Show	100	McCain & Whitworth
1/3/2022	Lubbock Monterey AMBUCS	25	Drury
4/19/2022	Rotary Club - Plainview	55	Whitworth & Barron
5/26/2022	Lubbock Association of Realtors	28	Coleman, Barron, & Brady
6/15/2022	TX 4-H Ambassadors	35	Coleman, Barron, & Brady
8/17/2022	TAWC Field Day	100	Barron & Brady
9/7/2022	North Region Issues Retreat – AgriLife Ext.	65	Barron & Brady
9/14/2022	West Texas Home Builders Association	150	Coleman, Barron, & Brady
9/27/2022	Hockley County Ag Day	400	Barron & Brady
	TOTAL	**1,268**	

Management Objective 7.7 – Youth Education

The District will provide water conservation education to youth within its service area.

Performance Standards:

7.7a Document the number of presentations and youth reached once per year

HPWD Education and Outreach staff gave 5 presentations that reached an estimated 585 students during Fiscal Year 2022. The Tinker Education program was supplied to 34 public schools, 45 teachers, and 2,035 students.

Management Objective 7.8 – HPWD Website

The District will provide information about groundwater availability, water conservation, and other subjects on its website.

Performance Standards:

7.8a Document annual website traffic using an analytical program.

According to Squarespace Analytics, the HPWD website received 56,115 views during Fiscal Year 2022. This is a 6 percent increase from Fiscal Year 2021.

The top pages that users visited are as follows: 1) Home Page; 2) Interactive Maps; 3) Contact Us; 4) Aquifers; 5) Who We Are; 6) Reports; 7) Agenda and Minutes; and 8) Well Permitting. The interactive maps at map.hpwd.org received 9,571 views during Fiscal Year 2022.

HPWD's social media feeds (*Facebook, Instagram, Pinterest, Twitter, and YouTube*) are also accessible via the District's website.

GOAL 8: RECHARGE ENHANCEMENT

Management Objective 8.1 – Research and Demonstration Opportunities

Since the District's creation, HPWD has committed many resources to recharge enhancement studies and demonstrations. Recharge wells and enhanced recharge structures are just several examples of this past work. As managed aquifer research (MAR) technologies evolve, we expect additional research and demonstration opportunities. HPWD may encourage work in this area through its policy of research and demonstration proposals.

Performance Standards:

8.1a Number of research/demonstration MAR proposals received by HPWD each year.

None.

8.1b Number of research/demonstration MAR proposals funded by HPWD each year.

None.

GOAL 9: RAINWATER HARVESTING

The District will promote awareness of this conservation practice to residents of the District.

Performance Standards:

9.1a Number of public presentations dedicated to rainwater harvesting each year.

HPWD staff gave three public presentations dedicated to rainwater harvesting. In addition, rainwater harvesting was mentioned during other presentations given by HPWD staff during the year.

9.1b Number of articles or publications written regarding rainwater harvesting each year.

MONTH	ARTICLE HEADLINE
October 2021	"Free Rain Barrel"
November 2021	"Rainwater Harvesting Presentation Opportunity"
February 2022	"6th Biennial Water Conservation Symposium: Roger Gloe"
June 2022	"National Gardening Week"
June 2022	"Texas Rain Catcher Awards"
July 2022	"Rainwater Harvesting, Samuel Jackson"
September 2022	"Troubled Waters: Who owns groundwater, surface water, and the rain"

9.1c Number of rainwater harvesting devices distributed to the public each year.

4 rainwater harvesting barrels were distributed to the public during Fiscal Year 2022.

GOAL 10: PRECIPITATION ENHANCEMENT – Not Applicable

During the years 1997-2002, HPWD conducted a weather modification ("precipitation enhancement") program. In late 2002, residents of the District voiced much opposition to this program, and several county commissioners' courts adopted resolutions against the continuation of the program. The program was subsequently terminated by the HPWD board, and this goal is not applicable.

GOAL 11: BRUSH CONTROL – Not Applicable

Existing programs administered by the U.S. Department of Agriculture Natural Resources Conservation Service (USDA-NRCS) are addressing this issue. This activity is not cost-effective and applicable for the District at this time. Therefore, the goal is not applicable to the operation of the District.

GOAL 12: DESIRED FUTURE CONDITIONS OF THE AQUIFERS

Management Objective 12.1 – Calculate Average Yearly Water Level Change

The District's currently adopted desired future conditions (DFCs) were developed using an average yearly water level change within the GMAs. Each winter, HPWD and other GCDs obtain water level measurements to determine the change from the previous year.

Performance Standards:

12.1a Number of wells included in the calculation.

HPWD and the other groundwater conservation districts in GMA #2 collectively had 1,525 wells measured in both 2021 and 2022. A well must be measured in both years in order to calculate the yearly change.

12.1b Calculated average water level change.

The calculated average water level change was -0.40 ft across GMA #2. This is from the Ogallala/Edwards-Trinity (High Plains) data.

12.1c Compare total cumulative change to the adopted DFC.

The total cumulative change was a decline of -6.80 feet. This compares to the adopted DFC of -10.4 feet.

Management Objective 12.2 – Estimating Annual Usage

Calculating annual groundwater use is necessary for monitoring progress toward achieving the desired future conditions. Although a regional groundwater model provides an estimate of usage to meet that goal, a more specific local estimate may increase our understanding of the usage and corresponding changes in volume.

Performance Standards:

12.2a Estimate total usage within the district using reported data and irrigation estimates.

Irrigation usage accounts for 98% or more of the total annual usage within HPWD. Reported data is submitted by water users from a variety of different water user groups. These include beef feed yards, dairies, municipalities, school districts, and irrigated producers. Data obtained from the cooperators in the HPWD Irrigation Assessment Program is also very helpful.

Estimated 2021 Irrigation Water Usage — 1,816,187 acre-feet.
Estimated 2022 Irrigation Water Usage — data collection still in progress

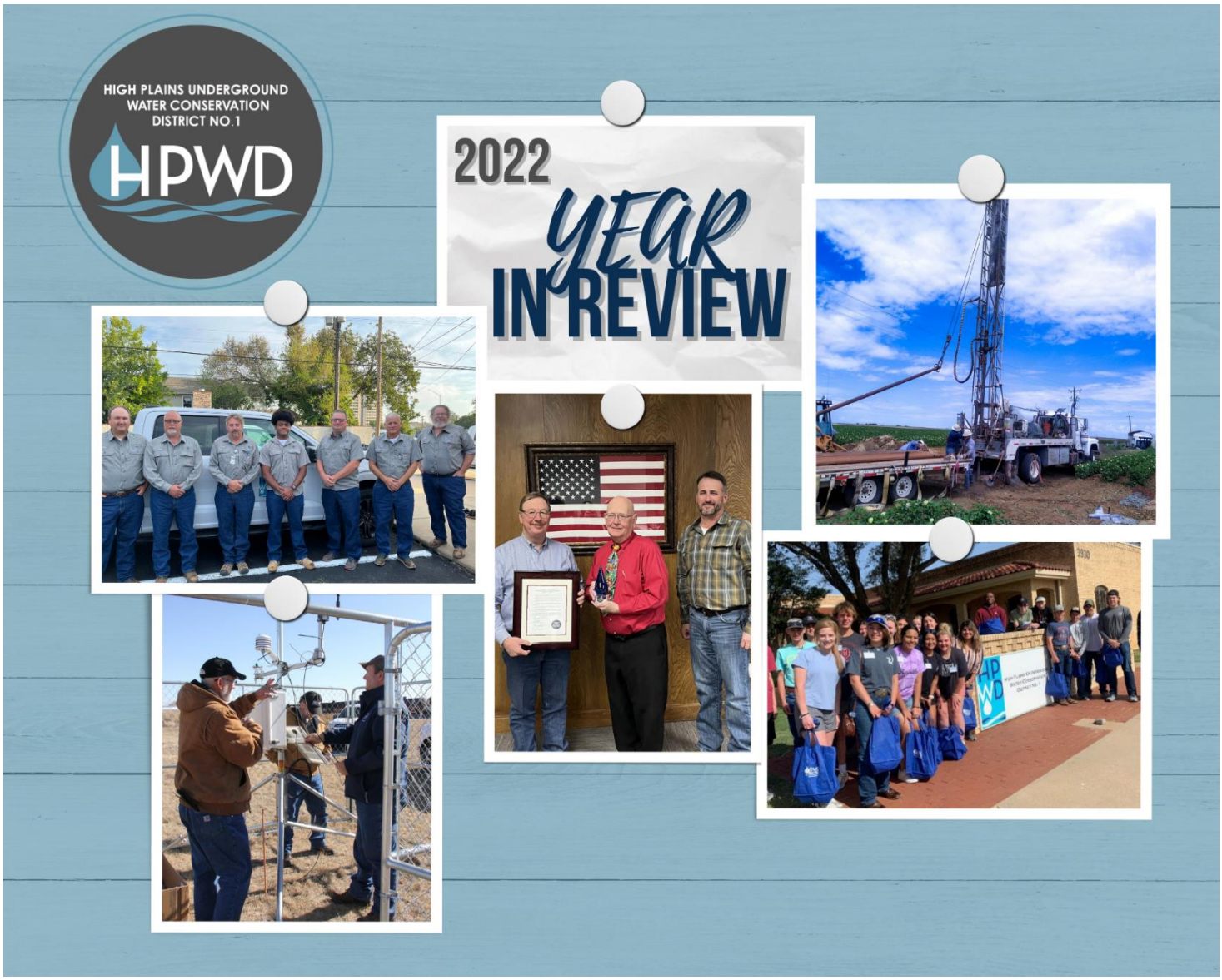
12.2b Compare estimated annual usage to data from the High Plains Aquifer System (HPAS)Groundwater Availability Model (GAM)

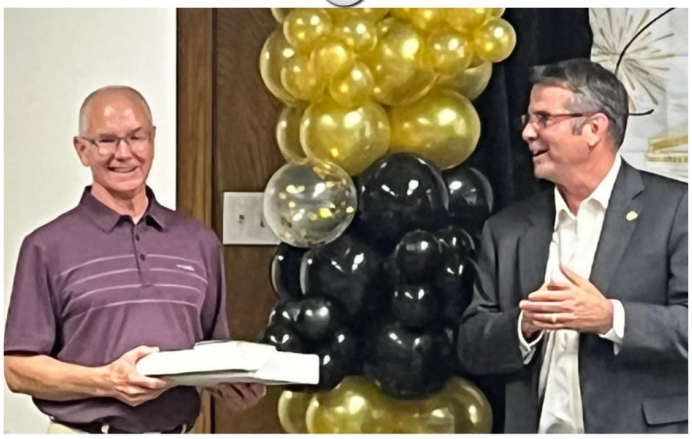
After adopting desired future conditions for relevant aquifers, each groundwater conservation district (GCD) is given a Modeled Available Groundwater (MAG) report. This data is supplied by the Texas Water Development Board. HPWD is part of Groundwater Management Areas 1 & 2, and consequently has MAG reports for both parts of the District:

Ogallala/Edwards-Trinity (High Plains) Aquifers
Total MAG for 2022 — 2,007,006 acre-feet.

Dockum Aquifer
Total MAG for 2022 —28,067 acre-feet.

A LOOK BACK AT FISCAL YEAR 2022





KEITH WHITWORTH

Retirement

44 Years

FIELD TECHNICIAN SUPERVISOR

Remembering

CARMON MCCAIN

34 Years

INFORMATION / EDUCATION SUPERVISOR