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# 2021 Annual Report

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

[www.hpwd.org](http://www.hpwd.org)

## **ANNUAL REPORT COVER:**

**HPWD celebrated its 70<sup>th</sup> anniversary on September 29, 2021.**

**TOP LEFT:** HPWD demonstrated its first experimental tailwater collection pit at the James Mabry farm in Parmer County in 1962.

**TOP RIGHT:** Even HPWD vehicles promote water conservation! This April 1971 photo was taken outside the HPWD office at 1628 15<sup>th</sup> Street in Lubbock.

**BOTTOM LEFT:** Precinct Three Director A. W. (Webb) Gober of Farwell, Precinct One Director Ray Kitten of Slaton, and Precinct Two District Director Selmer H. Schoenrock of Levelland inspect the new HPWD office prior to accepting keys to the facility on March 19, 1975.

**BOTTOM RIGHT:** HPWD Chief Hydrologist William L. (Bill) Broadhurst, an unidentified landowner, and Field Technician Y. F. Snodgrass examine an open, uncovered well. HPWD has promoted the proper closure of open water wells since the 1950s.

*Social media graphic by Katherine Drury*

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- GOAL ONE:**            **Providing the Most Efficient Use of Groundwater.**
- GOAL TWO:**        **Controlling and Preventing Waste of Groundwater.**
- GOAL THREE:**      **Controlling and Preventing Subsidence *(Not Applicable)*.**
- GOAL FOUR:**       **Conjunctive Surface Water Management Issues.**
- GOAL FIVE:**       **Natural Resource Issues *(Not Applicable)*.**
- GOAL SIX:**         **Drought Conditions.**
- GOAL SEVEN:**     **Conservation, Recharge Enhancement, Rainwater Harvesting, Precipitation Enhancement, or Brush Control, Where Appropriate and Cost-Effective.**
- GOAL EIGHT:**      **Recharge Enhancement *(Not Applicable)*.**
- GOAL NINE:**       **Rainwater Harvesting.**
- GOAL TEN:**        **Precipitation Enhancement *(Not Applicable)*.**
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# High Plains Underground Water Conservation District No. 1

Created by local residents and the state legislature in September 1951, the High Plains Underground Water Conservation District No. 1 (HPWD) marked its **70<sup>th</sup> anniversary** in Fiscal Year (FY) 2021.

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 2021. **It is from October 1, 2020 to September 30, 2021.**

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 11, 2022 regular meeting in Lubbock, TX.***



## BOARD OF DIRECTORS

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

## DISTRICT STAFF

<b>Jason Coleman, P.E.</b>	General Manager
<b>Tammy Anderson</b>	Accountant
<b>Billy Barron</b>	Field Technician
<b>Liz Casias</b>	Receptionist/Administrative Assistant
<b>Katherine Drury</b>	Education and Outreach Coordinator
<b>Ray Eads</b>	Field Technician ( <i>Canyon</i> )
<b>Lance Epperson</b>	Field Technician
<b>Mark Hamilton</b>	Field Technician
<b>Jed Leibbrandt</b>	GIS Specialist
<b>Carmon McCain</b>	Information/Education Group Supervisor
<b>Juan Peña</b>	Permit Supervisor
<b>Vance Porter</b>	Field Technician
<b>Gray Sanders</b>	Information Technology Administrator
<b>Andres Villarreal</b>	Field Technician
<b>* Victoria Whitehead</b>	General Counsel
<b>Keith Whitworth</b>	Field Technician Supervisor

\* Resigned from staff – June 2021

# COUNTY ADVISORY COMMITTEES

*(October 1, 2020 to September 30, 2021)*

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.

COUNTY	MEMBERS
<b>ARMSTRONG</b>	Jim Bob Burnett, Wayside, TX
<b>BAILEY</b>	Brett Bamert, Muleshoe, TX John Bruce Barrett, Springlake, TX Tim Black, Muleshoe, TX Jim Pat Claunch, Muleshoe, TX Kelly Kettner, Muleshoe, TX Eric McElroy, Muleshoe, TX
<b>CASTRO</b>	Darrell Buckley, Dimmitt, TX Donny Carpenter, Dimmitt, TX Kirk Farris, Nazareth, TX Coy Myrick, Nazareth, TX Max Swinburn, Dimmitt, TX Dale Wilhelm, Nazareth, TX
<b>COCHRAN</b>	Tommy Carter, Morton, TX Curtis Griffith, Lubbock, TX Glen Lyon, Morton, TX Scott Simpson, Morton, TX Richard Williams, Morton, TX
<b>CROSBY</b>	David Appling, Crosbyton, TX Dusty Cornelius, Crosbyton, TX Wayne Laminack, Ralls, TX John Schoepf, Lorenzo, TX Brad Thornhill, Crosbyton, TX Reagan Ware, Ralls, TX
<b>DEAF SMITH</b>	Frankie Bezner, Hereford, TX Kevin Buse, Hereford, TX Michael Carlson, Hereford, TX Andrew Gee, Hereford, TX Chris Grotegut, Dawn, TX Andy Schaap, Hereford, TX Harold Sides, Wildorado, TX

COUNTY	MEMBERS
<b>FLOYD</b>	<p>Ray Brady, Floydada, TX  Hulon Carthel, Floydada, TX  Warren Mitchell, Lockney, TX  Kerry Pratt, Floydada, TX</p>
<b>HALE</b>	<p>Rob Bass, Plainview, TX  Gaylord Groce, Petersburg, TX  Jeff Harrell, Plainview, TX  Brad Martin, Edmonson, TX  John Ross, Plainview TX  Jimmy Sageser, Kress, TX</p>
<b>HOCKLEY</b>	<p>David Carter, Levelland, TX  George Childress Jr., Levelland, TX  Raymond Marek, Pep, TX  Donald Rhoads, Ropesville, TX  Preston Turner, Levelland, TX</p>
<b>LAMB</b>	<p>Jeff Edwards, Amherst, TX  Kerry Faver, Littlefield, TX  Bryan Patterson, Amherst, TX  Kevin Riley, Springlake, TX  Tullie Struve, Olton, TX</p>
<b>LUBBOCK</b>	<p>Steve Barrett, Lubbock, TX  J.O. Dawdy, Floydada, TX  Gary Evitt, Idalou, TX  Lynn Harrist, Shallowater, TX  Linda Taylor, Ropesville, TX  Rodney Terry, Wolfforth, TX  Heath Verett, Ralls, TX</p>
<b>LYNN</b>	<p>Ty Askew, Tahoka, TX  Kevin Buxkemper, Slaton, TX  Ralph Huffaker, Tahoka, TX  Stacy Smith, Wilson, TX  Michael White, Tahoka, TX</p>

COUNTY	MEMBERS
<b>PARMER</b>	Jerry Don Glover, Muleshoe, TX Cris Ingram, Friona, TX Terry Jesko, Muleshoe, TX Steve Kaltwasser, Farwell, TX Josh McDonald, Muleshoe, TX Ryan Williams, Farwell, TX
<b>POTTER</b>	Michael Menke, Amarillo, TX
<b>RANDALL</b>	Charles Allison, Amarillo, TX Randy Darnell, Amarillo, TX Greg Glover, Amarillo, TX Dillon Pool, Amarillo, TX Pat Scarth, Amarillo, TX Ryan Wieck, Umbarger, TX David Winters, Canyon, TX
<b>SWISHER</b>	Brian Borchardt, Tulia, TX Barry Evans, Tulia, TX Trent Finck, Tulia, TX Max Moore, Kress, TX Jeremy Reed, Kress, TX



## KEY EVENTS OF HPWD FISCAL YEAR 2021

*(October 1, 2020 to September 30, 2021)*

<b>October 2020</b>	<ul style="list-style-type: none"> <li>• Former HPWD Geologist John Sullivan dies Oct. 20. He was 51.</li> <li>• HPWD begins use of Nextdoor to share information with public.</li> </ul>
<b>November 2020</b>	<ul style="list-style-type: none"> <li>• HPWD Board conducts Nov. 24 public hearing for rule revision comments.</li> <li>• HPWD Board approves revisions to District rules.</li> <li>• Mike Beauchamp honored for service as Precinct Three District Director.</li> </ul>
<b>December 2020</b>	<ul style="list-style-type: none"> <li>• Domestic water well layer added to interactive map.</li> </ul>
<b>January 2021</b>	<ul style="list-style-type: none"> <li>• Precinct Three and Four District Directors Receive Oath of Office.</li> <li>• 2020 was a drought year in HPWD service area.</li> <li>• HPWD featured on TX Parks and Wildlife TV series on PBS.</li> <li>• Annual water level measurements begin January 4, 2021.</li> <li>• Renovations begin on HPWD office in Lubbock.</li> <li>• 87<sup>th</sup> Texas Legislature convenes.</li> </ul>
<b>February 2021</b>	<ul style="list-style-type: none"> <li>• HPWD among presenters at virtual Ogallala Aquifer Summit, Feb. 24-25.</li> </ul>
<b>March 2021</b>	<ul style="list-style-type: none"> <li>• Water level measurements indicate decline of -1.33 feet within District.</li> <li>• HPWD accepts credit cards for permit fees and water depletion requests.</li> </ul>
<b>April 2021</b>	<ul style="list-style-type: none"> <li>• TWDB seeks public comments on 2022 State Water Plan.</li> </ul>
<b>May 2021</b>	<ul style="list-style-type: none"> <li>• Staff sees increase in number of applications for water well permits.</li> </ul>
<b>June 2021</b>	<ul style="list-style-type: none"> <li>• HPWD Board awards grant funding for research and demonstration projects.</li> <li>• HPWD Board conducts June 8 public hearing to receive DFC comments.</li> <li>• General Counsel Victoria Whitehead resigns.</li> <li>• TX 4-H Water Ambassadors visit HPWD office.</li> </ul>
<b>July 2021</b>	<ul style="list-style-type: none"> <li>• HPWD Board conducts July 13 public hearing to receive DFC comments.</li> <li>• TWDB adopts 2022 State Water Plan.</li> <li>• Youth Agricultural Lifetime Leadership group (YALL) visits Lubbock.</li> </ul>
<b>August 2021</b>	<ul style="list-style-type: none"> <li>• Member districts in GMA # 2 adopt desired future conditions (DFCs)</li> <li>• Tinker Water Education program offered for second year in HPWD.</li> </ul>
<b>September 2021</b>	<ul style="list-style-type: none"> <li>• HPWD marks 70<sup>th</sup> anniversary on September 29, 2021.</li> <li>• HPWD Board sets 2021 ad valorem tax rate of \$0.0051 per \$100 valuation.</li> </ul>

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

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This annual report is a brief summary of the programs and activities conducted during the 2020 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 2021 fiscal year at a total cost of about \$2.9 million.

All bills and monthly financial reports for the district are available on the HPWD web site ([www.hpwd.org](http://www.hpwd.org)). The public has access to the information presented during each board meeting using the “Agendas and Minutes” link on the website.

During the 2021 fiscal year, the HPWD Board approved some much-needed updates to the district’s 46-year-old office in Lubbock.

These updates included: plumbing fixes in restrooms, new flooring throughout, new paint on interior walls, creation of a designated lobby area for guests, and development of a staff break room. We also installed additional security at the office, including external surveillance cameras. All of this work was performed at a cost of about \$180,000.

We also funded several Dockum test holes as part of the Dockum Partnership Program in 2021. Both test holes were located in Parmer County. This data is particularly useful as there is very little data for Dockum Aquifer wells in Parmer County.

HPWD welcomed a new board member for Precinct 3 during 2021. Tony Beauchamp was sworn in as district director at the January 2021 Board Meeting. Tony is engaged in water conservation as an irrigator, and his knowledge of Precinct 3 is quite valuable.

One of our main objectives remains public education. If you or someone you know needs groundwater information, please contact our office. The staff here is capable of providing useful information in this area.

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

# ANNUAL REPORT OF ATTAINMENT OF GOALS 2021

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## **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 make 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 1,393 wells measured. Of these, 1,301 are Ogallala Aquifer wells, 58 are Edwards-Trinity (High Plains) Aquifer wells, and 34 are Dockum Aquifer wells.

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

Approximately 16 Ogallala Aquifer wells were unmeasurable in 2021. Each of these wells were pumping.

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

HPWD Field Staff added 19 new Ogallala Aquifer wells to the observation well network in 2021. There were (3) Dockum Aquifer wells added. There were 22 Ogallala Aquifer wells dropped from the observation well network in 2021.

##### **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](http://map.hpwd.org). Dockum Aquifer data are available for viewing at [dockumstudy.hpwd.org](http://dockumstudy.hpwd.org)

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

There are 48 continuous water level monitoring transducers installed/maintained in wells within the district. Of these, six wells are visited to download data and 48 wells update data on a daily basis. Data from these wells is available at [map.hpwd.org](http://map.hpwd.org) → **Daily Observation Wells**.

### **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	84	56
Cochran	48	37
Crosby	18	82
Deaf Smith	83	61
Floyd	86	67
Hale	47	59
Hockley	75	39
Lamb	90	49
Lubbock	85	56
Lynn	58	49
Parmer	95	48
Potter	6	55
Randall	38	52
Swisher	51	45

**1.2b** Provide saturated thickness data via the District website.

These data are available to the public as part of the HPWD interactive observation well feature at [map.hpwd.org](http://map.hpwd.org). Clicking on an observation well location on the map brings up a table with the observation well number, county, permit number, depth to base of the aquifer, and depth to water/saturated thickness information for a 10-year period.

State Well Number: 2428601 County: Hockley		
District Number: 41788		Depth to Base: 229
Year	Depth to Water	Saturated Thickness
2011	147.39	81.61
2012	147.59	81.41
2013	149.12	79.88
2014	149.83	79.17
2015	149.19	79.81
2016	148.02	80.98
2017	147.95	81.05
2018	147.15	81.85
2019	149.65	79.35
2020	149.57	79.43
2021	150.72	78.28

## 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.** Approximately 1,174 tests were conducted in 2021. This includes 1,071 water wells and 103 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 four (4) 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 1,346 water level measurements made for individual well owners in Fiscal Year 2021. Of these, 530 were for the Irrigation Assessment Program. The remaining 816 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 127 sites covering 14,997 acres of land.
- 1.4b Document the types of crops being irrigated each year.** Corn, cotton, grain sorghum, peanuts, silage, and wheat are the primary irrigated crops in 2021. There is also alfalfa, grass, and sunflowers.
- 1.4c Document the irrigation methods being utilized each year.** There are currently 12,896 acres with pivot irrigation and 2,102 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.

Several new data tools were added to the HPWD Interactive web map in 2021. In addition, refinements were made to improve existing features.

A new **Dockum Aquifer Study layer** includes drillers and geophysical well logs; water quality data as collected by grab samples and Aqua Troll devices; flow test information; and water level data in observation wells, study wells, and wells equipped with pressure transducers.

The new **Domestic Water Well layer** shows the location of domestic water wells based upon state well reports. Domestic well locations are depicted by an orange dot. The well count in an area is shown by varying shades of blue. The lighter shades show areas with fewer wells while the dark blue shades show areas with a greater concentration of wells.

A **Well Yield Calculator tool** was added to the HPWD website. Persons using the well yield calculator tool are asked to enter their current production rate in gallons of water per minute and saturated thickness in feet. The tool will then calculate well yields associated with declining saturated thickness. The well yield estimates stop when saturated thickness reaches 20 feet.

The format for the **daily water level measurement charts** has been revised to automatically show the base of the aquifer as visitors move their cursor over the chart. These data can be reviewed for one month, three-month, six-month, year to date, or longer periods.

The **aquifer bore tool** was revised and **new symbology** was added to the interactive map.

### 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, which include permits, well logs and geophysical logs. The locations of Observation Network wells are available to view Annual and Daily water levels through an interactive graph.

Employing the Well Spacing Guide will allow users to estimate a desired drilling location based upon the District's minimum distance rules. The "Aquifer Info" tab allows persons to access a "virtual bore" for any location within the HPWD service area. This recently-revised tool provides representative data for elevation of the water table, saturated thickness of the aquifer, depth to the formation, and thickness of the formation.

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

- Aquifer Info tab with "virtual bore" for any location in the HPWD service area.
- Interactive web map feature with base to aquifer, depth-to-water, and saturated thickness.
- Dockum Aquifer Study data.
- Groundwater Management Area (GMA) Map.
- Regional Water Planning Group (RWPG) Map.
- Rain Gauge Network Map.
- Drought Map.
- Center Pivot and Subsurface Drip Irrigation (SDI) Location Map.
- Domestic water well interactive map layer.

## 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. (2022 inventory)

**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. (2022 inventory)

## 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 aquifer each year.**

AQUIFER	2021	2020
Dockum Aquifer	55	42
Edwards-Trinity (High Plains) Aquifer	3	0
Ogallala Aquifer	904	704
<b>TOTAL</b>	<b>962</b>	<b>746</b>

**2.1b Production categories of well permits issued.**

DOCKUM AQUIFER		
	2021	2020
70 gallons per minute	0	0
165 gallons per minute	0	0
265 gallons per minute	8	3
500 gallons per minute	44	31
> 500 gallons per minute	3	8
<b>TOTAL</b>	<b>55</b>	<b>42</b>

<b>EDWARDS-TRINITY (High Plains) AQUIFER</b>		
	<b>2021</b>	<b>2020</b>
70 gallons per minute	0	0
165 gallons per minute	2	0
265 gallons per minute	1	0
390 gallons per minute	0	0
500 gallons per minute	0	0
> 500 gallons per minute	0	0
<b>TOTAL</b>	<b>3</b>	<b>0</b>

<b>OGALLALA AQUIFER</b>		
	<b>2021</b>	<b>2020</b>
Under 17.5 gallons per minute	0	0
70 gallons per minute	244	224
165 gallons per minute	397	240
265 gallons per minute	126	117
390 gallons per minute	74	66
560 gallons per minute	62	54
1,000 gallons per minute	0	3
> 1,000 gallons per minute	1	0
<b>TOTAL</b>	<b>904</b>	<b>704</b>

### **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 field work, 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.** Three (3).
- 2.2b Number of well caps provided to cover open wells each year.** One (1).
- 2.2c Number of open, uncovered, deteriorated wells that were capped, closed, or repaired in accordance with district rules each year.** Three (3). There are zero (0) case reports of open, deteriorated, or uncovered wells still in progress at year’s end.

### **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 four (4) reports of irrigation tailwater waste and zero (0) reports of urban water waste in 2021. Each was investigated and resolved by HPWD staff.

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

MONTH	ARTICLE HEADLINE
April 2021	Save Water by signing up for WaterMyYard program
May 2021	Despite recent rainfall: Water efficient practices still important
September 2021	Autumn provides opportunities for home water conservation
November 2021	Most Americans unaware of daily water consumption

## 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 17 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 the following Region A meetings:

- June 29, 2021 Panhandle Regional Planning Commission, Amarillo.

HPWD Staff attended the following Region O meetings:

- August 25, 2021 South Plains Association of Governments, Lubbock.
- November 17, 2021 South Plains Association of Governments, Lubbock.

**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	96
Edwards-Trinity (High Plains) Aquifer	54
Ogallala Aquifer	31
Irrigation Systems	86
<b>TOTAL</b>	<b>267</b>

**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**

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 web site 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 15.03 inches of precipitation and Lubbock received 20.55 inches of precipitation in calendar year 2021. The normal values are 20.36 inches for Amarillo and 19.12 inches for Lubbock. The departure from normal for Amarillo was – 5.33 inches while the departure from normal for Lubbock was + 1.43 inches.

MONTH	ARTICLE HEADLINE
Oct. 2020- Sept. 2021	Monthly Drought Monitor Maps in print & e-newsletter.
Oct. 2020 - Sept. 2021	10 Social Media posts with drought-related topics.
October 2021	“Warmer temps, extreme rainfall likely by 2036”
October 2021	“2011 Drought Worse Than Thought” news brief and link to article
December 2021	“Dry winter boosts drought in region”

**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 for public viewing on the “Maps → Other” section of the HPWD website ([www.hpwd.org/other](http://www.hpwd.org/other)).

**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 2,636 electronic version subscribers and 632 print version subscribers at the end of Fiscal Year 2021.

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

There were 24 electronic issues and 12 print issues produced/distributed during the 2021 Fiscal Year.

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

There were 20 articles addressing conservation practices in Fiscal Year 2021.

MONTH	NEWSLETTER ARTICLE HEADLINE
January 2021	"It's time to start planning for a Waterwise Summer"
January 2021	"TPWD TV show examines role of playa basins"
February 2021	"February 24-25 virtual Ogallala Aquifer Summit"
March 2021	"Water level measurements indicate average change of - 1.33 feet"
March 2021	"Blue Legacy Award honors outstanding conservation efforts"
April 2021	"Save water by signing up for WaterMyYard program"
April 2021	"Visit HPWD website for rainwater harvesting information"
May 2021	"Despite recent rainfall: Water efficient practices are still important"
July 2021	"Soil health and dryland farming discussed at Stewarding Our Aquifer field day"
July 2021	"TWDB adopts 2022 State Water Plan"
August 2021	"Researchers optimistic about Zoysia Grass use in Panhandle"
August 2021	"Water District field work is a year-round process"
September 2021	"Autumn provides opportunities for home water conservation"
September 2021	"Common groundwater principles" news brief and link to report
October 2021	"New tools aid playa basin management decisions"
October 2021	"High tech buoys measure evaporation" news brief and link to article
October 2021	"Hydropanels create drinking water" news brief and link to article
October 2021	"On-Farm recharge" news brief and link to article
October 2021	"TWDB Rain Catcher Award winners" news brief and link to article
November 2021	"Most Americans unaware of daily water consumption"

## 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 13 news releases produced and distributed to the media in Fiscal Year 2021.

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

There were three (3) news releases addressing conservation practices.

MONTH	NEWS RELEASE
March 2021	"HPWD Accepting RFPs for Research & Demonstration Projects"
March 2021	"Annual Water Level Measurements Show Average Decline of -1.33 Ft"
March 2021	"WaterMyYard can take guesswork out of lawn irrigation"

## 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.

Each quarter, one radio announcement was produced and distributed to eight radio stations within the HPWD service area. The Fiscal Year 2021 topics included: 1) Annual water level measurements begins in January; 2) water level measurement results; 3) water conservation tips; and 4) general HPWD services.

## 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.

STAFF MEMBER	NUMBER OF PRESENTATIONS IN FISCAL YEAR 2021
Jason Coleman	3
Katherine Drury	23
Katherine Drury & Victoria Whitehead	1
Katherine Drury & Keith Whitworth	2
Carmon McCain	4
<b>TOTAL</b>	<b>33</b>

HPWD staff were able to resume in-person presentations to civic clubs and professional organizations after COVID-19 restrictions were relaxed.

## 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 2”	\$ 30,000.00
“Field Evaluation of Sensor & Communication Platforms”	\$ 18,700.00

"Industrial Hemp Fiber Yield of Dryland Vs. Limited Irrigation – Year 2"	\$ 18,000.00
"Ogallala Commons Playa Field Days & Festivals"	\$ 4,500.00
"Plant Based Polymers as Treatment Agents in Removal of Microplastics ..."	\$ 28,000.00
"Preston Smith Elementary Star Garden"	\$14,680.43
"Remote Sensing Analysis of Change in Irrigated Areas"	\$ 24,700.00
"Roots Booker T Washington Water Catchment Improvement Project"	\$ 5,411.19
"Texas 4-H Water Ambassadors Program"	\$ 5,000.00
"Water Works Education Exhibit – FiberMax Center for Discovery"	\$ 172,225.00
<b>TOTAL</b>	<b>\$ 321,216.62</b>

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

MONTH	NEWSLETTER ARTICLE HEADLINE
February 2021	"HPWD Now Accepting RFPs For Research Projects"
June 2021	"HPWD Board Approve Research & Demonstration Funding"

### **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
10/1/2020	Presentation to West Texas A&M Class	60	Drury
10/7/2020	Slaton ISD	18	Drury
10/9/2020	Playa Lake Festival at Nazareth	40	Drury
10/13/2020	Ogallala Commons Field Day	35	Drury
10/21/2020	TALL Cohort – Bamert Seed Muleshoe	25	Coleman
10/22/2020	Plainview Soroptimist Club	10	McCain
10/23/2020	Slaton ISD Field Trip to HPWD Office	25	Drury
10/26/2020	Panhandle Master Naturalists	18	Drury
10/28/2020	West Texas Golf Superintendents Assn.	45	Drury
11/5/2020	TX 4-H Ambassadors Virtual Meeting	20	Drury & Whitehead
11/12/2020	TX Ag Industries Virtual Meeting	40	Drury
11/16/2020	Greater Southwest Rotary Club – Lubbock	20	McCain
12/1/2020	Slaton ISD	18	Drury
1/28/2021	Slaton ISD	18	Drury

2/1/2021	Lubbock Water Advisory Commission	21	Coleman
2/5/2021	Rotary Club	30	Drury
2/23/2021	Farwell City Council Meeting	11	Coleman
2/25/2021	Ogallala Aquifer Virtual Summit	216	Drury
2/26/2021	Downtown Chapter of AMBUCS – Lubbock	14	McCain
4/9/2021	TGWA Conference	35	Drury
4/17/2021	Xylem Staff Presentation	9	Drury
4/20/2021	Southcrest STEM Club	35	Drury
4/28/2021	Kids, Kows, and More	75	Drury
5/4/2020	Muleshoe Rotary Club	23	McCain
6/8/2021	Tulia Rotary Club	15	Drury & Whitworth
6/29/2021	4H Water Ambassadors	35	Drury
7/12/2021	AgriLife YALL Tour	40	Drury & Whitworth
7/26/2021	Panhandle Master Naturalists	20	Drury
8/3/2021	Lubbock Master Gardeners	25	Drury
8/24/2021	Slaton QUEST	15	Drury
9/2/2021	Dr. Laza’s Class at Texas Tech	30	Drury
9/27/2021	Playa Field Day at Nazareth	45	Drury
9/29/2021	Slaton QUEST	15	Drury
9/30/2021	Playa Field Day in Nazareth	60	Drury
	<b>TOTAL</b>	<b>1,161</b>	

## 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 14 presentations that reached an estimated 294 students during Fiscal Year 2021.

## 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 54,944 views during Fiscal Year 2021. This is a 11 percent increase from Fiscal Year 2020.

The top pages that users visited are as follows: 1) Home Page; 2) Interactive Maps; 3) Aquifers;

4) Rules; 5) Reports; 6) Agendas and Minutes; 7) Well Permitting; and 8) Contact Us. The interactive maps at map.hpwd.org received 8,991 views during Fiscal Year 2021.

HPWD’s social media feeds (*Facebook, Pinterest, Twitter, and You Tube*) 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.

The District’s annual rainwater harvesting workshops were canceled due to the COVID-19 pandemic.

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

MONTH	NEWSLETTER ARTICLE HEADLINE
<b>April 2021</b>	“Rainwater harvesting” news brief
<b>May 2021</b>	“Despite recent rainfall: Water efficient practices are still important”
<b>October 2021</b>	“TWDB Rain Catcher Award winners” news brief and link to article



**9.1c Number of rainwater harvesting devices distributed to the public each year.** Between five (5) and ten (10) rainwater harvesting barrels were distributed to the public during Fiscal Year 2021.

## **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 counties 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 1,585 wells measured in both 2020 and 2021. A well must be measured both years in order to calculate the yearly change.

**12.1b Calculated average water level change.** The calculated average water level change was -1.48 of a foot 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 -6.40 feet. This compares to the adopted DFC of -9.7 feet.

The districts in GMA # 2 met January 25, 2021, March 25, 2021, and August 17, 2021.

## 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 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 2020 Irrigation Water Usage — 2,021,139 acre-feet.

Estimated 2021 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 2021 — 2,083,871 acre-feet.

##### **Dockum Aquifer**

Total MAG for 2021 — 28,026 acre-feet.

# A LOOK BACK AT FISCAL YEAR 2021



***HPWD Office Renovation***



***Precinct 3 & 4 Directors Receive Oath of Office at Muleshoe***



***TX 4-H Water Ambassadors Visit***



***DFC Public Hearing at Canyon***



***GMA # 2 Meeting***



***Research & Demonstration Committee Meeting***



***Cuttings from Floyd County Dockum Aquifer Partnership Well***



***Education & Outreach Coordinator Katherine Drury being interviewed for Texas Master Naturalist Video***



***Keith Whitworth tests water samples from Slaton ISD students***

