Region A
Panhandle Water
Planning Group

P.O. Box 9257, Amarillo, Texas 79105 | Phone: 806-372-3381 | Fax: 806-373-3268

March 4, 2024

Jeff Walker
Texas Water Development Board
1700 North Congress
Austin, Texas 78711-3231

RE: Panhandle Regional Planning Area (Region A) Technical Memorandum

Dear Mr. Walker,

Enclosed please find two electronic copies of the Panhandle Region Technical Memorandum that was approved by the Panhandle Water Planning Group on February 6, 2024. Electronic files required to be submitted will be provided to Texas Water Development Board staff by email.

In accordance with the contractual requirements, a public meeting was held on February 6, 2024 to present and discuss the Technical Memorandum. Notice of the meeting was posted on January 23, 2024. Public comments were solicited at the public meeting. No public comments were received at the public meeting or during the comment period.

If you have any questions on this submittal, please contact Simone Kiel of Freese and Nichols, Inc. (817-735-7446).

Sincerely,

Ben Weinheimer, P.E.
Chairman, Region A Panhandle Water Planning Group

CC: Michele Foss, TWDB
Jarian Fred, PRPC
Simone Kiel, Freese and Nichols, Inc.

Innovative approaches
Practical results
Outstanding service

PANHANDLE REGIONAL WATER PLANNING AREA

TECHNICAL MEMORANDUM

Prepared for:

Texas Water Development Board

On behalf of the Panhandle Water Planning Group

March 4, 2024

Prepared by:

FREESE AND NICHOLS, INC.
801 Cheery Street, Suite 2800
Fort Worth, Texas 76109
817-735-7300

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APPENDICES

EXECUTIVE SUMMARY

This Technical Memorandum discusses population and water demand projections, water availability, existing water supplies, and identified potentially feasible water management strategies in the Panhandle Regional Planning Area (PWPA or Region A) for the sixth cycle of regional water plan development. Included in this report is the required Texas Water Development Board (TWDB) 2027 database (DB27) reports along with the additional information required for the Technical Memorandum submittal as set forth in Section 2.12.1 of TWDB's *Second Amended Exhibit C (General Guidelines for the 2026 Regional Water Plans)* dated September 2023. A public meeting was held on February 6, 2024, to discuss the contents of this memorandum. Notice of the meeting was posted on January 23, 2024. Public comments were solicited at the public meeting.

1.0 TWDB DB27 REPORTS

All required DB27 reports are in **Appendix A** of this document. The seven required DB27 reports for this Technical Memorandum are summarized below.

1.1 POPULATION AND WATER DEMAND PROJECTIONS

In 2022, TWDB released their draft non-municipal demand projections for all regions. Draft population and municipal projections were provided to the regions in 2023. Two population migration scenarios were prepared for the draft projections and the regions' consideration. Each Regional Water Planning Group was given the ability to make limited adjustments to the projections based on available data to support the requested revisions. The Panhandle Water Planning Group (PWPG) met on November 1, 2022, and approved revisions to the draft livestock, manufacturing, and steam electric power water demands. The PWPG did not recommend revisions to the draft mining demands. Revisions were also requested and approved by the PWPG for the irrigation water demands on April 19, 2023, and the population and municipal demands on July 18, 2023. These revision requests were reviewed by TWDB staff and submitted, with some changes, to the TWDB Board of Directors for final approval. TWDB approved the final projections in November 2023.

Appendix A contains two database reports related to population and demand. The reports are:

- **TWDB DB27 Report #1 - WUG Population Projections**
- **TWDB DB27 Report #2 - WUG Water Demand Projections**

TWDB DB27 Report #1 presents the projected populations for each municipal water user group. This includes water utilities or water systems that provide an average of more than 100 acre-feet per year to retail municipal customers, and rural/unincorporated areas of municipal water use, known as County Other. **TWDB DB27 Report #2** provides the projected water demands for each water user group. This includes both municipal and non-municipal demands. The data in Reports #1 and #2 are reported by entity, county, and river basin.

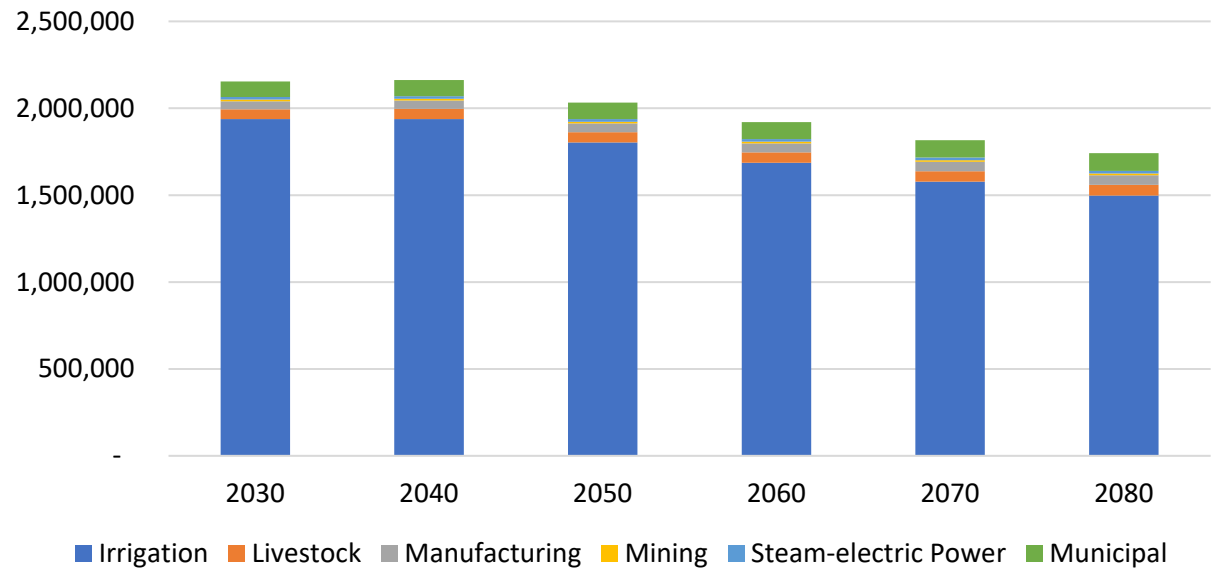
In additional to these summary tables, **Table 1-1** shows the population projections by county. The population for the PWPA is expected to increase from nearly 408,000 to over 470,000 from 2030 to 2080. Most of the increase in population and municipal demands occur in Randall County, as part of the greater Amarillo area. **Figure 1-1** is a graph of demands by use type and decade for the PWPA. Agricultural water

use (irrigation) accounts for the vast majority of the demand in the PWPA. Total water demands in the PWPA are expected to decrease over time as irrigation water use declines due to limited supply.

Table 1-1: Adopted Population Projections for PWPA by County

County	2030	2040	2050	2060	2070	2080
ARMSTRONG	1,819	1,789	1,773	1,760	1,747	1,734
CARSON	5,555	5,311	5,037	4,718	4,400	4,083
CHILDRESS	6,721	6,736	6,638	6,563	6,488	6,413
COLLINGSWORTH	2,498	2,426	2,290	2,182	2,074	1,966
DALLAM	7,353	7,734	8,086	8,289	8,491	8,693
DONLEY	3,070	2,893	2,683	2,560	2,437	2,314
GRAY	21,243	20,982	20,339	19,553	18,769	17,986
HALL	2,622	2,478	2,290	2,131	1,972	1,813
HANSFORD	5,333	5,448	5,483	5,571	5,659	5,747
HARTLEY	5,377	5,350	5,298	5,224	5,150	5,076
HEMPHILL	3,273	3,268	3,154	3,087	3,020	2,953
HUTCHINSON	20,414	19,914	19,076	18,157	17,241	16,326
LIPSCOMB	2,903	2,763	2,584	2,435	2,286	2,137
MOORE	21,383	21,482	21,392	20,870	20,350	19,831
OCHILTREE	10,458	10,999	11,341	11,664	11,986	12,307
OLDHAM	1,708	1,559	1,371	1,168	966	764
POTTER	118,628	118,038	115,217	110,549	105,894	101,248
RANDALL	159,318	179,106	197,748	215,738	233,780	251,857
ROBERTS	778	748	725	720	715	710
SHERMAN	2,677	2,623	2,537	2,436	2,335	2,234
WHEELER	4,854	4,719	4,545	4,408	4,271	4,134
PWPA TOTAL	**407,985**	**426,366**	**439,607**	**449,783**	**460,031**	**470,326**

Figure 1-1: Total Water Demand Projections for PWPA by Use Type and Decade in Acre-Feet per Year



1.2 SOURCE WATER AVAILABILITY

Source water availability is the total amount of water available from a specific water source. Surface water sources include reservoirs, run-of-the-river, and local supplies. Groundwater sources are identified by aquifer, county, and river basin. Reuse and Aquifer Storage and Recovery (ASR) sources are defined by county and basin. **TWDB DB27 Report #3 – Source Water Availability** presents the available water by source. Under the TWDB regional water planning guidelines, each region is to identify available water supplies within the region. The supplies available by source are based on the supply available during drought of record conditions. For surface water reservoirs, this is generally the equivalent of firm yield supply or the permitted amount, whichever is lower. Several providers in the PWPA have chosen to use safe yields, as opposed to firm yields, as the available supply. The safe yield is less than the firm yield and leaves a reserve storage at the end of the drought of record. For run-of-river supplies, the reliable supply is the minimum modeled annual diversion over the historical record. Available groundwater supplies are generally determined through the Joint Planning Process and Modeled Available Groundwater (MAG) values, which define the long-term available groundwater supply for the major and minor aquifers within the PWPA. The MAG values are reported by the TWDB by county and basin for regional water planning. MAG values were not developed for "other aquifer" or non-relevant aquifers.

The PWPA has a total of approximately 3.6 million acre-feet per year of available water in 2030. This includes both developed and undeveloped supplies. Most of this supply is associated with groundwater sources. **Table 1-2** shows the overall water supply source availability in the PWPA. It should be noted that these supplies have not been limited by the current infrastructure that treats and delivers the water. The amount of supply available when considering infrastructure limitations is referred to as "Existing Water Supplies" and is discussed in **Section 1.3** of this Technical Memorandum.

Table 1-2: Overall Water Supply Source Availability in the PWPA (Acre-Feet per Year)

	2030	2040	2050	2060	2070	2080
RESERVOIRS	27,740	27,570	27,400	27,192	26,983	26,775
RUN-OF-RIVER	1,859	1,859	1,859	1,859	1,859	1,859
LOCAL SUPPLY	13,192	13,192	13,192	13,192	13,192	13,192
GROUNDWATER	3,560,201	3,331,121	3,061,178	2,804,958	2,550,514	2,319,402
REUSE	21,147	21,151	21,150	21,146	21,142	21,139
PWPA TOTAL	**3,624,139**	**3,394,893**	**3,124,779**	**2,868,347**	**2,613,690**	**2,382,367**

1.2.1 Surface Water

Surface water in the Panhandle is supplied by three reservoirs, run-of-river supplies associated with water rights, and local livestock supplies. Surface water availabilities from Lake Meredith and Palo Duro Reservoir were calculated using a mass-balance reservoir model as opposed to the TCEQ-approved Water Availability Models (WAMs) because the WAMs do not include the recent drought. Greenbelt Reservoir was evaluated using the most recent Red River WAM, which was published in 2023. Run-of-river supplies were based on results from the TCEQ-approved WAMs. The surface water supplies from reservoirs available to the PWPA are shown in **Table 1-3**. These supplies are based on the safe yield of the reservoir. Supplies from run-of-river rights and local supplies were summarized previously in **Table 1-2**.

Table 1-3: Reservoir Surface Water Supplies Available to the PWPA in Acre-Feet per Year

Reservoir	2030	2040	2050	2060	2070	2080
GREENBELT LAKE	3,140	2,970	2,800	2,592	2,383	2,175
MEREDITH LAKE	24,600	24,600	24,600	24,600	24,600	24,600
PALO DURO LAKE	0	0	0	0	0	0
RESERVOIR TOTAL	**27,740**	**27,570**	**27,400**	**27,192**	**26,983**	**26,775**

1.2.2 Groundwater

Groundwater supplies in the PWPA are obtained from the following formations:

- Blaine Aquifer
- Dockum Aquifer
- Ogallala Aquifer
- Ogallala-Rita Blanca Aquifer
- Seymour Aquifer
- Locally undifferentiated formations, referred to as "Other Aquifer"

As required by regional planning rules, MAG estimates provided by the TWDB were used to determine groundwater availability. For the PWPA, TWDB provided the MAG values for the five named formations listed above. Groundwater availability for the Whitehorse Formation, which is listed under Other Aquifer, is discussed in **Appendix C**. The PWPA includes Groundwater Management Area 1 (GMA-1) and part of GMA-6. The groundwater supplies available to the PWPA are summarized in **Table 1-4.**

Table 1-4: Groundwater Supplies Available to the PWPA in Acre-Feet per Year

Aquifer	2030	2040	2050	2060	2070	2080
Blaine	31,404	31,404	31,404	31,404	31,404	31,404
Dockum	326,541	321,453	304,182	284,240	259,902	241,087
Ogallala and Rita Blanca	556,185	452,114	379,087	323,340	280,372	247,045
Ogallala	2,591,830	2,471,899	2,290,419	2,111,790	1,925,423	1,744,061
Other	2,753	2,753	2,753	2,753	2,753	2,753
Seymour	51,488	51,498	53,333	51,431	50,660	53,052
Total	**3,560,201**	**3,331,121**	**3,061,178**	**2,804,958**	**2,550,514**	**2,319,402**

1.3 EXISTING WATER SUPPLIES

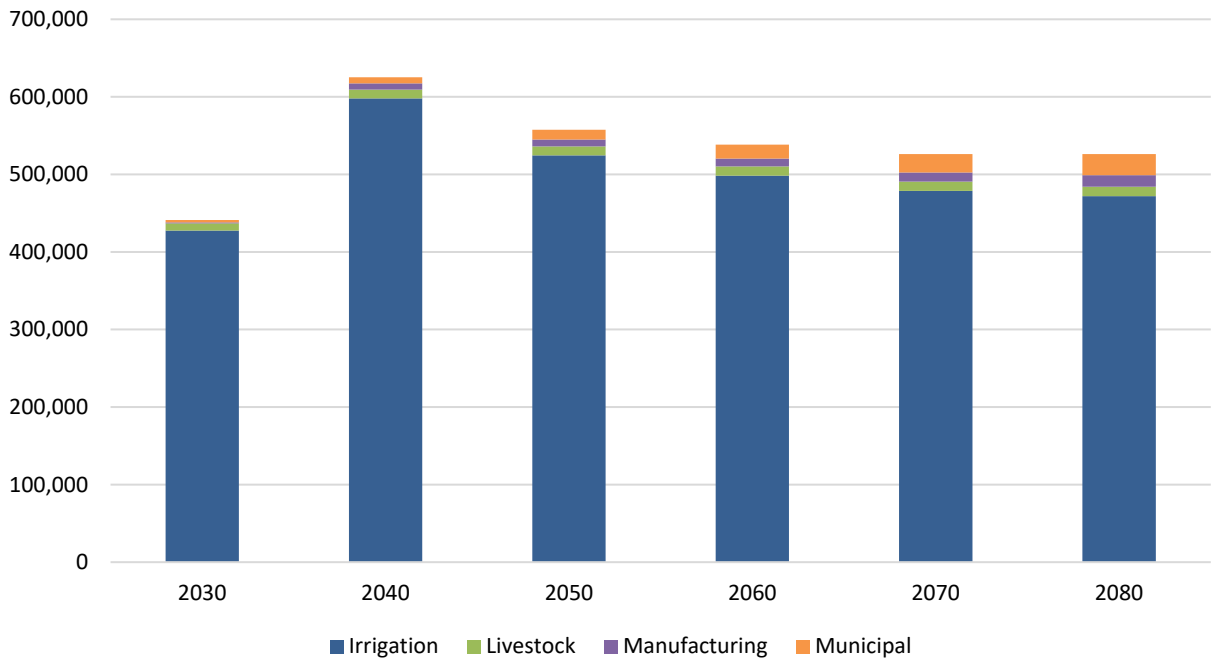
Existing Water Supplies (sometimes referred to as "currently available supplies" or "connected supplies") are supplies that are limited by water rights, contracts, and facilities that are currently in place. The Existing Water Supplies are less than the overall supplies available to the region (Source Water Availability from **Section 1.2**) because the supplies have not been fully developed or additional facilities are needed to use the source water. Common constraints limiting supplies include the hydrogeologic properties of the source aquifers, capacity of transmission systems, treatment plants, and wells.

Nearly 1.9 million acre-feet of water is allocated to water users in the PWPA in 2030. This decreases over time as groundwater declines. By 2080, the currently available supplies is 1.26 million acre-feet. Existing supplies for each water user group are detailed in **TWDB DB27 Report #4** in **Appendix A**.

1.4 IDENTIFIED WATER NEEDS/SURPLUSES

For each Water User Group, the Existing Water Supply was compared to the projected demand, resulting in either a need or a surplus for the WUG. The water supply needs that are unmet by existing water supplies are outlined below in **Figure 1-2** by category of use. Most of the need is associated with irrigated agriculture. **TWDB DB27 Report #5 – WUG Identified Water Needs/Surpluses** is a compilation of this information for all WUGs.

Figure 1-2: Water Supply Needs by Use Type and Decade in Acre-Feet per Year



1.5 COMPARISON TO 2021 REGIONAL WATER PLAN

Using its online database (DB27), TWDB has developed comparisons of information from the 2026 Regional Water Plan to information from the 2021 Regional Water Plan. The comparisons have been done for each Water User Group and for each supply source type by county, which are contained in **TWDB DB27**

Report #7 – Comparison of Supply, Demands, and Needs to 2021 RWP and **TWDB DB27 Report #8 – Comparison of Availability to 2021 RWP**. Both reports are included in **Appendix A**. While there are differences in demands and supplies for most water user groups, the biggest differences are associated with changes in source availability. For surface water, Palo Duro Reservoir is now shown to have no reliable supply in all decades. There are also lower run-of-the-river supplies in the Red River Basin, which reflects an extended hydrology through 2018. For groundwater, MAGs from the Ogallala GAM were developed using a different approach than in previous joint planning cycles. This resulted in slightly less groundwater in the early decades and more groundwater in later decades.

2.0 DETERMINING SOURCE AVAILABILITY

2.1 SURFACE WATER

2.1.1 Reservoir Sedimentation Rates

Over time sediment that is carried with inflows accumulates in reservoirs, which reduces the storage capacity of the reservoir and can affect the reservoir supply. For some reservoirs, like Lake Meredith, that have a sediment pool the impact of sedimentation is negligible. For other reservoirs in watersheds with highly erodible soils, sedimentation can significantly reduce reservoir yields. In the PWPA, reservoir sedimentation rates were estimated from published documents and volumetric surveys. The total accumulated sediment is calculated as:

[Sedimentation Rate] X [Drainage Area] X [Number of years from the Volumetric Survey]

This formula is used to estimate the reservoir capacity for decades 2030, 2050 and 2080. The total sediment quantity is applied to the base area-capacity-elevation (ACE) curve using either a conical or trapezoidal method (depending upon the best fit for the reservoir) to develop the new ACE. For Lake Meredith and Greenbelt Reservoir, the sediment distribution was adjusted to account for historical storage since these reservoirs have never filled to the conservation capacity. **Table 2-1** shows the sedimentation calculations for the reservoir in the PWPA.

Table 2-1: Estimated Sedimentation Rates and Projected Capacities

Reservoir	Drainage Area (SqMi)	Sediment Rate (ac-ft/SqMi)	Year of Initial Capacity	Conservation Capacities (ac-ft)				Sediment Rate Source
				Initial	2030	2050	2080	
Meredith[1]	6,048	0.088	1995	500,000	500,000	500,000	500,000	TWDB, 2003
Palo Duro[2]	440	0.20	1986	60,897	NA	54,422	NA	FNI, 1986
Greenbelt	266	0.75	1966	59,800	47,018	43,028	37,043	TBWE, 1959

[1]At conservation pool Lake Meredith has a total capacity of over 800,000 acre-feet per year. However, the Canadian River Compact limits the right of Texas to retain water in conservation storage within Lake Meredith to 500,000 ac-ft. The remaining storage is for sedimentation and inactive storage. The yield analyses assume the usable portion of the reservoir is the first 500,000 ac-ft above the inactive pool for all planning decades. As a result, sedimentation has no impact on the yield of Lake Meredith and conservation capacity does not change.

[2]The yield for Palo Duro Reservoir was analyzed only under 2060 sediment conditions, which are reported under year 2050 in the table above. Since the reservoir has little to no yield no additional yield analyses were performed.

2.1.2 Hydrologic Models

Two river basins lie within the PWPA, the Red River Basin and the Canadian River Basin. In accordance with regional planning rules and guidelines, surface water supplies must be determined using the latest version of the TCEQ Water Availability Models (WAMs) with full authorization unless a hydrologic variance is granted by the TWDB. The Canadian River WAM was initially published in 2001 covers the hydrologic period-of-record from 1948 to 1998. The Canadian WAM was updated by FNI to extend the hydrology through 2004, but even with this update, the WAM does not include the most recent drought that is the new drought of record for much of the region. The Red River WAM was recently updated by the TCEQ and includes the hydrologic period through 2018, which does include the most recent drought. In light of the limitations of the Canadian WAM, the PWPG requested to use an Excel-based model with extended hydrology for Lake Meredith and Palo Duro Reservoir. The TCEQ-approved Red River WAM was used to evaluate the supplies from Lake Greenbelt. The requested hydrologic variances are detailed in the PWPG's request letter to TWDB dated. TWDB approved the PWPG's variance request in a letter dated. Both letters are included in **Appendix B**.

Existing water supplies provided by run-of-river water rights in the Red and Canadian River Basins were determined using Run 3 of the Red River and Canadian River Basin WAMs, respectively.

2.1.3 Versions and Dates of Hydrologic Models

The following information is required for the hydrologic models used to determine Source Water Availability. More discussion on Source Water Availability is included in **Section 1.2** of this report.

The required details for each hydrologic model used is included in **Table 2-2**.

Table 2-2: Hydrologic Models Used in Determining Surface Water Availability

Hydrologic Model	Date Used	Run Used	Model Inputs/ Outputs Files Used	Comments
Canadian WAM	Oct 2014	Run 3, extended hydrology through 2004	CRUN3.dat CRUN3.OUT	Used to determine run-of-river supplies.
Palo Duro Reservoir Operations Model	October 17, 2023	Spreadsheet Model with Extended Hydrology	PaloDuroOp_LossFit.xlsb	Used to determine 2060 firm yield. Yield was held constant across the planning period.
Lake Meredith Operations Model	Feb 2018	Spreadsheet Model with Extended Hydrology	2021Meredith_firmyield_2020.xlsb 2021Meredith_firmyield_2070.xlsb 2021Meredith_safeyield_2020.xlsb 2021Meredith_safeyield_2070.xlsb	Yield for 2080 was extrapolated. Firm and Safe Yield.
Red WAM	October 1, 2023	Run 3	red3.dat red3.OUT	Used to determine Greenbelt Reservoir and run-of-river supplies. Firm and safe yields for Greenbelt.

Table 2-3 presents the yields for major reservoirs in the PWPA. The hydrology for Lake Meredith covers a period from 1940 to 2017. Based on historical storage in the lake, the critical period would not have changed since 2017. The firm yield does not change because the 500,000 acre-feet of conservation capacity does not change. The yield from Palo Duro Reservoir was assessed using an Excel-based model with extended hydrology through 2022. The most recent version of the WAM considered a period of record from January 1940 to September 2004, which does not include the recent droughts.

Table 2-3: Estimated Firm and Safe Yields for Major Reservoirs in the PWPA

Scenario	2030	2040	2050	2060	2070	2080
Lake Meredith						
Firm Yield (ac-ft/yr)	28,200	28,200	28,200	28,200	28,200	28,200
Safe Yield (ac-ft/yr)	24,600	24,600	24,600	24,600	24,600	24,600
Greenbelt Reservoir						
Firm Yield (ac-ft/yr)	4,000	3,850	3,700	3,433	3,167	2,900
Safe Yield (ac-ft/yr)	3,140	2,970	2,800	2,592	2,383	2,175
Palo Duro Reservoir						
Firm Yield (ac-ft/yr)	39	39	39	39	39	39

2.2 GROUNDWATER

2.2.1 Written Summary of Modeled Available Groundwater (MAGs)

The MAGs for this planning cycle came from two GAM run summary documents as follows: 1) GAM RUN 21-007 MAG (GR 21-007), which summarizes the MAG volumes for all aquifers within GMA-1, and 2) GAM RUN 21-001, which summarizes the MAG volumes for all aquifers in GMA-6 (**Table 2-4**).

GR 21-007 summarizes MAGS for the Ogallala, Rita Blanca, and Dockum Aquifers using the High Plains Aquifer System (HPAS) GAM. The Ogallala MAG volume for GMA-1 ranges from 3,156,169 acre-feet per year in 2030 to 1,998,736 acre-feet per year in 2080, which includes the volume from the Rita Blanca Aquifer where present. For the Dockum Aquifer, the volumes range from 327,077 acre-feet per year in 2030 to 242,020 acre-feet per year in 2080. The Blaine Aquifer in Wheeler County was designated to be non-relevant in the last cycle of Joint Groundwater Planning.

GR 21-011 summarizes the MAG volumes for the Seymour, Blaine, Ogallala, and Dockum Aquifers in GMA-6. The Ogallala Aquifer in Collingsworth County was designated as non-relevant by GMA-6. The only other counties in GMA-6 with Ogallala MAG volumes (Dickens and Motley) are not located within the PWPA. Therefore, there are no Ogallala MAG volumes in GR 21-011 for the PWPA. This is also true for the Dockum Aquifer.

The Seymour and Blaine Aquifers are only relevant within Childress, Collingsworth and Hall Counties. In these three counties, Seymour Aquifer MAG volumes range from 51,488 acre-feet per year in 2030 to 53,052 acre-feet per year in 2080, and the Blaine Aquifer MAG volume is 31,404 for all years between 2030 and 2080.

Table 2-4: GAM Models Used in Determining Ground Water Availability

GAM Version	Date Results Published	Model Inputs/ Outputs Files Used	Comments
GR 21-007	February 23, 2023	HPAS GAM (2015) and files submitted with the explanatory report	GMA-1
GR 21-011	November 14, 2022	-Seymour Aquifer refined model (2014) Pod 7 only. -Seymour and Blaine Aquifers GAM (2004) except for Pod 7.	GMA-6 Ogallala and Dockum MAG volumes are non-applicable to Region A.

2.2.2 Documented Methodologies Utilized for Non-MAGs Availabilities

Non-MAG availabilities are applicable to both those portions of aquifers designated as non-relevant and those portions of aquifers that are either undifferentiated or designated as "other." For this planning cycle, these non-MAG availabilities are listed in **Table 2-5**. The methodology used to determine the availability for the Whitehorse/Quartermaster formation is included in **Appendix C**. For the non-relevant aquifers in Collinsworth and Wheeler Counties, historical use was used. There is little reported historical use from the Ogallala in Collingsworth County, but the aquifer does extend into this county. A small amount of supply was assumed for this non-relevant portion of the Ogallala.

Table 2-5: Summary of Non-MAG Availability Volumes, in Acre-feet per Year

County	Aquifer	Availability (ac-ft/yr)	Method
Armstrong	Whitehorse/ Quartermaster	370	See Appendix C
Childress		233	
Collingsworth		309	
Donley		479	
Hall		1,086	
Wheeler		276	
Collingsworth	Ogallala[1]	50	No active wells, very small area
Wheeler	Blaine[2]	1,750	Historical pumping 2007-2016

1) Ogallala Aquifer in Collingsworth County designated as non-relevant for this planning cycle.

2) Blaine Aquifer in Wheeler County designated as non-relevant for this planning cycle.

3.0 POTENTIALLY FEASIBLE WATER MANAGEMENT STRATEGIES

3.1 PROCESS FOR IDENTIFYING POTENTIALLY FEASIBLE WMS

The process for identifying potentially feasible water management strategies was presented at the October 24, 2023, PWPG meeting in Amarillo. There were no public comments and the PWPG approved the methodology. A description of the methodology is presented in **Appendix D**.

3.2 LIST OF POTENTIALLY FEASIBLE WMS

A list of potentially feasible water management strategies is included in **Appendix E**. These strategies are based on preliminary discussions with wholesale water providers, water user survey responses, and recommendations from the 2021 regional water plan. During analysis and development of the regional water plan, other strategies may be identified and included in this list. The types of strategies considered include:

- Conservation (municipal and irrigation)
- Purchase water from a provider (Voluntary Transfer)
- Develop additional groundwater
- Surface water and groundwater desalination
- Water treatment
- Direct potable reuse
- Direct non-potable reuse
- Brush control
- Conjunctive Use (may be combined with other strategy types)
- Aquifer, storage and recovery (may be combined with other strategy types)
- Water from out of state

4.0 INTERREGIONAL COORDINATION

The PWPA borders two regions: Region B and Region O. There are two major water providers (CRMWA and Greenbelt MIWA) that provide water from the PWPA to adjoining regions. CRMWA provides water to 8 users in Region O and Greenbelt MIWA provides water to 6 customers in Region B. In addition, there are several similarities in the approaches and water concerns of these regions. To foster coordination with the adjoining regions, the PWPG has assigned liaison to each region. The liaisons attend the assigned region's planning group meeting and provide updates to the entire group. In addition, the consultants

conduct technical coordination with the adjoining region's consultant and RWPG representatives, as appropriate.

Specific interregional coordination activities conducted to date include:

- Livestock demand workshop with representatives from the PWPA and Region O was conducted on May 18, 2022
- Follow-up meeting with the Livestock Focus Group to approve the livestock demands for each region.

5.0 INFEASIBLE WATER MANAGEMENT STRATEGIES

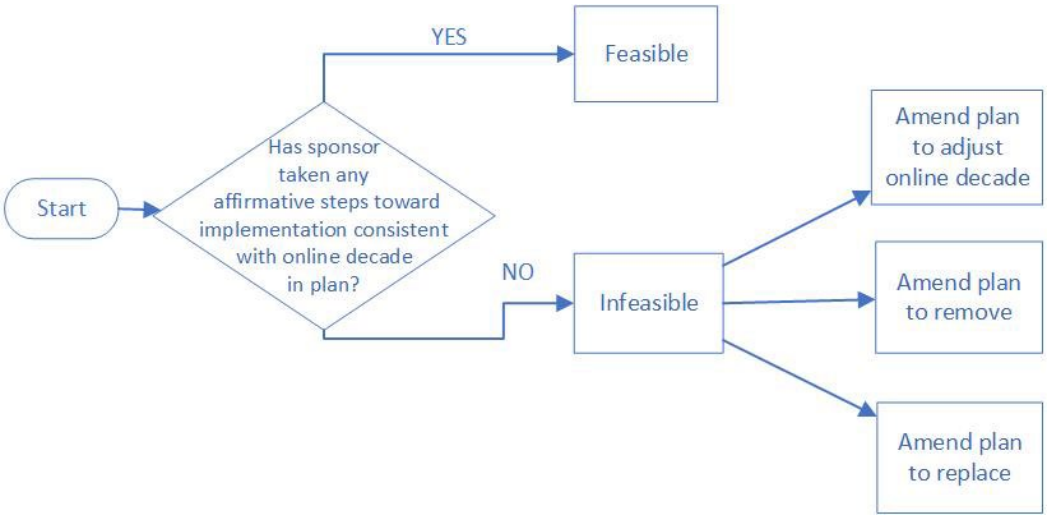
In compliance with recent legislation and rulemaking, each RWPG is required to review the recommended strategies in the 2021 regional water plan to identify any infeasible WMS and remove them from the plan. At a minimum, RWPGs must review the status of strategies and projects with an online decade of 2020 in the 2021 plans. Additional near-term strategies and projects that have lengthy permitting or construction process should also be reviewed for infeasibility.

For a strategy to be considered feasible, one or more of the following criteria must be met:

1) If the WMS is recommended in 2020, it must be online by January 5, 2023.
2) If the WMS is in the correct planning decade but not yet online, affirmative steps must be taken towards implementation. These steps may include but are not limited to:
    a. Spending money on the strategy or project,
    b. Voting to spend money on the strategy or project,
    c. Applying for a federal or state permit for the strategy or project.

The general approach to assessing infeasible strategies is shown in **Figure 5-1**.

Figure 5-1: General Approach to Assess Infeasible Water Management Strategies



Seventy WMSs were identified by the TWDB for review and include:

- 65 conservation strategies
- 2 groundwater strategies
- 3 other strategies
    - Brush Control
    - Treatment
    - Automated metering infrastructure

Strategies that do not require infrastructure (construction), funding, or do not have an identifiable sponsor are not subject to this review and are assumed to be feasible. Conservation strategies with a capital cost are assumed to be budgeted for on a yearly basis and are considered feasible. This resulted in five remaining strategies for review. FNI reached out to each of the sponsors to confirm whether action has been taken. A summary of this review is presented in **Table 5-1**.

Table 5-1: Infeasible Strategies Results

Strategy	Sponsor	Action Taken	Comment
Automated Metering (AMI)	Amarillo	Confirmed this project has begun	Feasible
Brush Control	CRMWA	Confirmed CRMWA is actively funding brush control	Feasible
Advanced treatment	Wellington	Unknown	Reached out multiple times and no response. Assume feasible.
New groundwater	Cactus	Unknown	Reached out multiple times and no response. Assume feasible.
New groundwater	Dalhart	Unknown	Reached out multiple times and no response. Assume feasible.

Based on this review, there are no infeasible strategies in the 2021 Panhandle Region Water Plan. This review is documented in the TWDB spreadsheet contained in **Appendix F**.

6.0 PUBLIC COMMENT

Per the TWDB Regional Planning Rules [31 TAC Section 357.21(c)(7)(C)], written comments from the public were accepted prior to and for the period of 14 days after the public meeting on February 6, 2024, when this Technical Memorandum was presented and considered for approval by the PWPG. Public comments were also accepted at this meeting.

7.0 REFERENCES

Freese and Nichols, Inc. (FNI, 1986), *Engineering Report on Palo Duro Reservoir*, June 1986.

Texas Board of Water Engineers (TBWE, 1959), Bulletin 5912, *Inventory and Use of Sedimentation Data in Texas*, prepared by the Soil Conservation Service for the TBWE, January 1959.

Texas Water Development Board (TWDB, 2003), *Volumetric Survey of Lake Meredith, June 1995 Survey*, March 2003.

APPENDIX A TWDB
DB27 Reports

DRAFT Region A Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Armstrong County Total	**1,819**	**1,789**	**1,773**	**1,760**	**1,747**	**1,734**
Armstrong County / Red Basin Total	**1,819**	**1,789**	**1,773**	**1,760**	**1,747**	**1,734**
Claude Municipal Water System	1,097	1,080	1,071	1,065	1,057	1,051
County-Other	722	709	702	695	690	683
Carson County Total	**5,555**	**5,311**	**5,037**	**4,718**	**4,400**	**4,083**
Carson County / Canadian Basin Total	**1,406**	**1,301**	**1,173**	**1,033**	**885**	**733**
Fritch	369	372	377	380	385	395
White Deer	323	294	258	220	179	136
County-Other	714	635	538	433	321	202
Carson County / Red Basin Total	**4,149**	**4,010**	**3,864**	**3,685**	**3,515**	**3,350**
Groom Municipal Water System	518	519	525	527	533	543
Panhandle Municipal Water System	2,233	2,238	2,265	2,276	2,302	2,347
White Deer	478	435	382	325	266	201
County-Other	920	818	692	557	414	259
Childress County Total	**6,721**	**6,736**	**6,638**	**6,563**	**6,488**	**6,413**
Childress County / Red Basin Total	**6,721**	**6,736**	**6,638**	**6,563**	**6,488**	**6,413**
Childress	5,031	5,206	5,133	4,991	4,844	4,697
Red River Authority of Texas*	1,585	1,491	1,466	1,501	1,537	1,574
County-Other	105	39	39	71	107	142
Collingsworth County Total	**2,498**	**2,426**	**2,290**	**2,182**	**2,074**	**1,966**
Collingsworth County / Red Basin Total	**2,498**	**2,426**	**2,290**	**2,182**	**2,074**	**1,966**
Red River Authority of Texas*	374	365	344	329	313	298
Wellington Municipal Water System	1,616	1,572	1,485	1,416	1,346	1,276
County-Other	508	489	461	437	415	392
Dallam County Total	**7,353**	**7,734**	**8,086**	**8,289**	**8,491**	**8,693**
Dallam County / Canadian Basin Total	**7,353**	**7,734**	**8,086**	**8,289**	**8,491**	**8,693**
Dalhart	5,670	6,027	6,379	6,752	7,143	7,551
Texline	433	449	463	478	494	511
County-Other	1,250	1,258	1,244	1,059	854	631
Donley County Total	**3,070**	**2,893**	**2,683**	**2,560**	**2,437**	**2,314**
Donley County / Red Basin Total	**3,070**	**2,893**	**2,683**	**2,560**	**2,437**	**2,314**
Clarendon	1,695	1,603	1,495	1,429	1,362	1,296
Red River Authority of Texas*	340	318	293	279	266	251

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region A Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
County-Other	1,035	972	895	852	809	767
Gray County Total	**21,243**	**20,982**	**20,339**	**19,553**	**18,769**	**17,986**
Gray County / Canadian Basin Total	**19,158**	**18,826**	**18,330**	**17,794**	**17,310**	**16,887**
Pampa Municipal Water System	17,214	16,777	16,451	16,217	16,102	16,131
County-Other	1,944	2,049	1,879	1,577	1,208	756
Gray County / Red Basin Total	**2,085**	**2,156**	**2,009**	**1,759**	**1,459**	**1,099**
McLean Municipal Water Supply	636	628	608	583	558	535
County-Other	1,449	1,528	1,401	1,176	901	564
Hall County Total	**2,622**	**2,478**	**2,290**	**2,131**	**1,972**	**1,813**
Hall County / Red Basin Total	**2,622**	**2,478**	**2,290**	**2,131**	**1,972**	**1,813**
Memphis	1,849	1,752	1,639	1,532	1,425	1,317
Red River Authority of Texas*	211	201	187	175	163	151
Turkey Municipal Water System	252	236	211	193	176	160
County-Other	310	289	253	231	208	185
Hansford County Total	**5,333**	**5,448**	**5,483**	**5,571**	**5,659**	**5,747**
Hansford County / Canadian Basin Total	**5,333**	**5,448**	**5,483**	**5,571**	**5,659**	**5,747**
Gruver	1,143	1,168	1,176	1,193	1,211	1,229
Spearman Municipal Water System	3,072	3,139	3,158	3,211	3,264	3,316
County-Other	1,118	1,141	1,149	1,167	1,184	1,202
Hartley County Total	**5,377**	**5,350**	**5,298**	**5,224**	**5,150**	**5,076**
Hartley County / Canadian Basin Total	**5,377**	**5,350**	**5,298**	**5,224**	**5,150**	**5,076**
Dalhart	3,187	3,264	3,365	3,500	3,651	3,821
Hartley WSC	439	429	421	417	414	413
County-Other	1,751	1,657	1,512	1,307	1,085	842
Hemphill County Total	**3,273**	**3,268**	**3,154**	**3,087**	**3,020**	**2,953**
Hemphill County / Canadian Basin Total	**2,963**	**2,957**	**2,853**	**2,790**	**2,727**	**2,665**
Canadian	2,347	2,339	2,255	2,200	2,147	2,094
County-Other	616	618	598	590	580	571
Hemphill County / Red Basin Total	**310**	**311**	**301**	**297**	**293**	**288**
County-Other	310	311	301	297	293	288

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region A Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Hutchinson County Total	**20,414**	**19,914**	**19,076**	**18,157**	**17,241**	**16,326**
Hutchinson County / Canadian Basin Total	**20,414**	**19,914**	**19,076**	**18,157**	**17,241**	**16,326**
Borger	12,269	12,106	11,807	11,462	11,138	10,841
Fritch	3,308	3,021	2,767	2,546	2,364	2,222
Stinnett	1,590	1,424	1,280	1,157	1,054	972
TCW Supply	1,317	1,187	1,074	975	894	829
County-Other	1,930	2,176	2,148	2,017	1,791	1,462
Lipscomb County Total	**2,903**	**2,763**	**2,584**	**2,435**	**2,286**	**2,137**
Lipscomb County / Canadian Basin Total	**2,903**	**2,763**	**2,584**	**2,435**	**2,286**	**2,137**
Booker	1,203	1,143	1,068	1,003	940	876
Darrouzett	296	279	259	243	226	208
Follett	320	284	250	225	208	200
Higgins Municipal Water System	302	284	263	244	225	206
County-Other	782	773	744	720	687	647
Moore County Total	**21,383**	**21,482**	**21,392**	**20,870**	**20,350**	**19,831**
Moore County / Canadian Basin Total	**21,383**	**21,482**	**21,392**	**20,870**	**20,350**	**19,831**
Cactus Municipal Water System	2,993	3,007	2,996	2,922	2,849	2,777
Dumas	14,752	14,830	14,776	14,427	14,083	13,742
Fritch	124	124	123	124	124	124
Sunray	1,510	1,516	1,511	1,473	1,439	1,402
County-Other	2,004	2,005	1,986	1,924	1,855	1,786
Ochiltree County Total	**10,458**	**10,999**	**11,341**	**11,664**	**11,986**	**12,307**
Ochiltree County / Canadian Basin Total	**10,458**	**10,999**	**11,341**	**11,664**	**11,986**	**12,307**
Booker	20	21	21	21	21	21
Perryton Municipal Water System	8,574	9,017	9,300	9,565	9,829	10,094
County-Other	1,864	1,961	2,020	2,078	2,136	2,192
Oldham County Total	**1,708**	**1,559**	**1,371**	**1,168**	**966**	**764**
Oldham County / Canadian Basin Total	**1,495**	**1,380**	**1,231**	**1,071**	**912**	**754**
Vega	806	801	776	756	738	721
County-Other	689	579	455	315	174	33
Oldham County / Red Basin Total	**213**	**179**	**140**	**97**	**54**	**10**
County-Other	213	179	140	97	54	10

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DRAFT Region A Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Potter County Total	**118,628**	**118,038**	**115,217**	**110,549**	**105,894**	**101,248**
Potter County / Canadian Basin Total	**72,168**	**71,817**	**70,114**	**67,292**	**64,480**	**61,677**
Amarillo	62,616	62,165	60,464	57,714	54,928	52,088
County-Other	9,552	9,652	9,650	9,578	9,552	9,589
Potter County / Red Basin Total	**46,460**	**46,221**	**45,103**	**43,257**	**41,414**	**39,571**
Amarillo	41,104	40,809	39,692	37,886	36,057	34,194
County-Other	5,356	5,412	5,411	5,371	5,357	5,377
Randall County Total	**159,318**	**179,106**	**197,748**	**215,738**	**233,780**	**251,857**
Randall County / Red Basin Total	**159,318**	**179,106**	**197,748**	**215,738**	**233,780**	**251,857**
Amarillo	108,316	121,927	134,753	147,145	159,571	172,021
Canyon	16,546	18,442	20,225	21,930	23,642	25,357
Happy*	43	38	33	29	25	21
Lake Tanglewood	570	462	374	300	240	192
Siesta Estates	341	384	426	464	504	543
County-Other	33,502	37,853	41,937	45,870	49,798	53,723
Roberts County Total	**778**	**748**	**725**	**720**	**715**	**710**
Roberts County / Canadian Basin Total	**756**	**727**	**705**	**700**	**695**	**690**
Miami	499	478	465	459	454	449
County-Other	257	249	240	241	241	241
Roberts County / Red Basin Total	**22**	**21**	**20**	**20**	**20**	**20**
County-Other	22	21	20	20	20	20
Sherman County Total	**2,677**	**2,623**	**2,537**	**2,436**	**2,335**	**2,234**
Sherman County / Canadian Basin Total	**2,677**	**2,623**	**2,537**	**2,436**	**2,335**	**2,234**
Stratford	1,743	1,708	1,653	1,587	1,520	1,455
Texhoma	224	220	212	205	195	187
County-Other	710	695	672	644	620	592
Wheeler County Total	**4,854**	**4,719**	**4,545**	**4,408**	**4,271**	**4,134**
Wheeler County / Red Basin Total	**4,854**	**4,719**	**4,545**	**4,408**	**4,271**	**4,134**
Shamrock Municipal Water System	1,633	1,592	1,544	1,512	1,481	1,454
Wheeler	1,432	1,392	1,342	1,301	1,260	1,220
County-Other	1,789	1,735	1,659	1,595	1,530	1,460
Region A Population Total	**407,985**	**426,366**	**439,607**	**449,783**	**460,031**	**470,326**

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DRAFT Region A Water User Group (WUG) Population

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region A Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Armstrong County Total	**7,079**	**7,079**	**7,084**	**7,089**	**7,094**	**7,099**
Armstrong County / Red Basin Total	**7,079**	**7,079**	**7,084**	**7,089**	**7,094**	**7,099**
Claude Municipal Water System	322	316	314	312	310	308
County-Other	88	86	85	84	83	82
Livestock	345	353	361	369	377	385
Irrigation	6,324	6,324	6,324	6,324	6,324	6,324
Carson County Total	**100,953**	**100,970**	**100,991**	**101,006**	**101,026**	**101,048**
Carson County / Canadian Basin Total	**25,869**	**25,856**	**25,839**	**25,823**	**25,805**	**25,785**
Fritch	99	99	100	101	103	105
White Deer	87	79	69	59	48	36
County-Other	90	80	68	55	41	25
Manufacturing	37	38	39	41	42	44
Livestock	187	191	194	198	202	206
Irrigation	25,369	25,369	25,369	25,369	25,369	25,369
Carson County / Red Basin Total	**75,084**	**75,114**	**75,152**	**75,183**	**75,221**	**75,263**
Groom Municipal Water System	159	159	161	161	163	166
Panhandle Municipal Water System	503	503	509	511	517	527
White Deer	128	116	102	87	71	54
County-Other	117	103	87	70	52	33
Manufacturing	1,460	1,514	1,570	1,628	1,689	1,751
Mining	3	3	3	3	3	3
Livestock	150	152	156	159	162	165
Irrigation	72,564	72,564	72,564	72,564	72,564	72,564
Childress County Total	**16,976**	**16,987**	**16,970**	**16,958**	**16,944**	**16,931**
Childress County / Red Basin Total	**16,976**	**16,987**	**16,970**	**16,958**	**16,944**	**16,931**
Childress	1,274	1,315	1,296	1,261	1,224	1,186
Red River Authority of Texas*	382	358	352	361	369	378
County-Other	21	8	8	14	21	28
Livestock	328	335	343	351	359	368
Irrigation	14,971	14,971	14,971	14,971	14,971	14,971
Collingsworth County Total	**50,608**	**50,603**	**49,058**	**43,833**	**44,291**	**51,692**
Collingsworth County / Red Basin Total	**50,608**	**50,603**	**49,058**	**43,833**	**44,291**	**51,692**
Red River Authority of Texas*	90	88	83	79	75	72
Wellington Municipal Water System	358	348	328	313	298	282

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DRAFT Region A Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
County-Other	104	100	94	89	85	80
Livestock	462	473	484	496	508	520
Irrigation	49,594	49,594	48,069	42,856	43,325	50,738
Dallam County Total	**349,186**	**349,596**	**311,927**	**279,642**	**255,665**	**237,693**
Dallam County / Canadian Basin Total	**349,186**	**349,596**	**311,927**	**279,642**	**255,665**	**237,693**
Dalhart	1,692	1,795	1,899	2,011	2,127	2,248
Texline	166	171	177	182	188	195
County-Other	144	144	142	121	98	72
Manufacturing	1,333	1,382	1,433	1,486	1,541	1,598
Livestock	5,222	5,475	5,543	5,613	5,684	5,757
Irrigation	340,629	340,629	302,733	270,229	246,027	227,823
Donley County Total	**34,028**	**34,006**	**33,983**	**33,975**	**33,967**	**33,958**
Donley County / Red Basin Total	**34,028**	**34,006**	**33,983**	**33,975**	**33,967**	**33,958**
Clarendon	298	281	262	251	239	227
Red River Authority of Texas*	82	76	70	67	64	60
County-Other	144	134	124	118	112	106
Livestock	1,064	1,075	1,087	1,099	1,112	1,125
Irrigation	32,440	32,440	32,440	32,440	32,440	32,440
Gray County Total	**42,991**	**42,991**	**42,898**	**42,786**	**42,677**	**42,572**
Gray County / Canadian Basin Total	**13,931**	**13,882**	**13,808**	**13,731**	**13,667**	**13,615**
Pampa Municipal Water System	3,207	3,114	3,054	3,010	2,989	2,994
County-Other	318	334	306	257	197	123
Manufacturing	344	357	369	383	397	412
Livestock	454	469	471	473	476	478
Irrigation	9,608	9,608	9,608	9,608	9,608	9,608
Gray County / Red Basin Total	**29,060**	**29,109**	**29,090**	**29,055**	**29,010**	**28,957**
McLean Municipal Water Supply	170	168	162	156	149	143
County-Other	238	249	228	191	147	92
Manufacturing	3	3	4	4	4	4
Livestock	1,305	1,345	1,352	1,360	1,366	1,374
Irrigation	27,344	27,344	27,344	27,344	27,344	27,344

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DRAFT Region A Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Hall County Total	**34,194**	**34,173**	**37,581**	**40,660**	**39,370**	**34,603**
Hall County / Red Basin Total	**34,194**	**34,173**	**37,581**	**40,660**	**39,370**	**34,603**
Memphis	296	280	261	244	227	210
Red River Authority of Texas*	51	48	45	42	39	36
Turkey Municipal Water System	89	84	75	68	62	57
County-Other	91	85	74	68	61	54
Manufacturing	1	1	1	1	1	1
Livestock	341	350	358	367	376	385
Irrigation	33,325	33,325	36,767	39,870	38,604	33,860
Hansford County Total	**182,211**	**182,350**	**182,475**	**182,618**	**182,761**	**182,910**
Hansford County / Canadian Basin Total	**182,211**	**182,350**	**182,475**	**182,618**	**182,761**	**182,910**
Gruver	381	388	391	397	402	408
Spearman Municipal Water System	858	875	880	895	909	924
County-Other	129	131	132	134	136	138
Manufacturing	359	372	386	400	415	430
Mining	93	93	93	93	93	93
Livestock	4,705	4,805	4,907	5,013	5,120	5,231
Irrigation	175,686	175,686	175,686	175,686	175,686	175,686
Hartley County Total	**412,425**	**413,312**	**367,432**	**334,325**	**306,358**	**283,477**
Hartley County / Canadian Basin Total	**412,425**	**413,312**	**367,432**	**334,325**	**306,358**	**283,477**
Dalhart	951	972	1,002	1,042	1,087	1,138
Hartley WSC	168	163	160	159	158	157
County-Other	323	304	277	240	199	154
Mining	85	85	85	85	85	85
Livestock	11,784	12,674	12,782	12,892	13,005	13,120
Irrigation	399,114	399,114	353,126	319,907	291,824	268,823
Hemphill County Total	**9,245**	**9,255**	**9,244**	**9,244**	**9,245**	**9,245**
Hemphill County / Canadian Basin Total	**6,387**	**6,392**	**6,376**	**6,370**	**6,365**	**6,360**
Canadian	601	597	575	561	548	534
County-Other	78	78	75	74	73	72
Mining	1,011	1,011	1,011	1,011	1,011	1,011
Livestock	642	651	660	669	678	688
Irrigation	4,055	4,055	4,055	4,055	4,055	4,055

*A single asterisk next to a WUG's name denotes that the WUG is split by more than one planning region.

DRAFT Region A Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Hemphill County / Red Basin Total	**2,858**	**2,863**	**2,868**	**2,874**	**2,880**	**2,885**
County-Other	40	39	38	38	37	36
Manufacturing	1	1	1	1	1	1
Mining	544	544	544	544	544	544
Livestock	451	457	463	469	476	482
Irrigation	1,822	1,822	1,822	1,822	1,822	1,822
Hutchinson County Total	**86,600**	**87,041**	**87,481**	**87,947**	**88,463**	**89,033**
Hutchinson County / Canadian Basin Total	**86,600**	**87,041**	**87,481**	**87,947**	**88,463**	**89,033**
Borger	3,535	3,480	3,394	3,295	3,201	3,116
Fritch	883	805	737	678	630	592
Stinnett	357	319	286	259	236	217
TCW Supply	942	848	768	697	639	593
County-Other	197	219	216	203	180	147
Manufacturing	18,231	18,906	19,606	20,331	21,083	21,863
Mining	67	67	67	67	67	67
Livestock	522	531	541	551	561	572
Irrigation	61,866	61,866	61,866	61,866	61,866	61,866
Lipscomb County Total	**46,720**	**46,722**	**46,712**	**46,713**	**46,715**	**46,718**
Lipscomb County / Canadian Basin Total	**46,720**	**46,722**	**46,712**	**46,713**	**46,715**	**46,718**
Booker	337	320	299	281	263	245
Darrouzett	84	79	74	69	64	59
Follett	95	84	74	67	62	59
Higgins Municipal Water System	87	82	75	70	65	59
County-Other	183	180	173	168	160	151
Manufacturing	708	734	761	789	818	848
Mining	1,018	1,018	1,018	1,018	1,018	1,018
Livestock	859	876	889	902	916	930
Irrigation	43,349	43,349	43,349	43,349	43,349	43,349
Moore County Total	**220,858**	**222,530**	**208,873**	**190,389**	**169,304**	**151,822**
Moore County / Canadian Basin Total	**220,858**	**222,530**	**208,873**	**190,389**	**169,304**	**151,822**
Cactus Municipal Water System	857	859	855	834	813	793
Dumas	3,032	3,038	3,027	2,956	2,885	2,815
Fritch	33	33	33	33	33	33
Sunray	337	338	337	328	321	312
County-Other	261	257	255	247	238	229

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DRAFT Region A Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Manufacturing	11,139	11,551	11,978	12,421	12,881	13,358
Mining	33	33	33	33	33	33
Livestock	13,844	15,099	15,158	15,219	15,281	15,345
Irrigation	191,322	191,322	177,197	158,318	136,819	118,904
Ochiltree County Total	**93,086**	**93,262**	**93,384**	**93,501**	**93,620**	**93,738**
Ochiltree County / Canadian Basin Total	**93,086**	**93,262**	**93,384**	**93,501**	**93,620**	**93,738**
Booker	6	6	6	6	6	6
Perryton Municipal Water System	2,452	2,572	2,653	2,728	2,804	2,879
County-Other	279	291	300	308	317	325
Manufacturing	34	35	36	37	38	39
Mining	797	797	797	797	797	797
Livestock	2,835	2,878	2,909	2,942	2,975	3,009
Irrigation	86,683	86,683	86,683	86,683	86,683	86,683
Oldham County Total	**7,266**	**7,236**	**7,195**	**7,151**	**7,106**	**7,063**
Oldham County / Canadian Basin Total	**2,876**	**2,851**	**2,817**	**2,782**	**2,745**	**2,710**
Vega	224	222	215	210	205	200
County-Other	201	169	132	92	50	10
Mining	312	312	312	312	312	312
Livestock	929	938	948	958	968	978
Irrigation	1,210	1,210	1,210	1,210	1,210	1,210
Oldham County / Red Basin Total	**4,390**	**4,385**	**4,378**	**4,369**	**4,361**	**4,353**
County-Other	62	52	41	28	16	3
Mining	104	104	104	104	104	104
Livestock	394	399	403	407	411	416
Irrigation	3,830	3,830	3,830	3,830	3,830	3,830
Potter County Total	**56,849**	**57,116**	**57,000**	**56,504**	**56,026**	**55,566**
Potter County / Canadian Basin Total	**33,693**	**33,621**	**33,312**	**32,760**	**32,214**	**31,666**
Amarillo	13,829	13,686	13,312	12,706	12,093	11,467
County-Other	1,661	1,670	1,670	1,657	1,653	1,659
Manufacturing	679	704	730	757	785	814
Mining	478	508	539	572	607	643
Steam Electric Power	15,000	15,000	15,000	15,000	15,000	15,000
Livestock	344	351	359	366	374	381

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DRAFT Region A Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Irrigation	1,702	1,702	1,702	1,702	1,702	1,702
Potter County / Red Basin Total	**23,156**	**23,495**	**23,688**	**23,744**	**23,812**	**23,900**
Amarillo	9,078	8,984	8,738	8,341	7,938	7,528
County-Other	931	937	936	930	927	931
Manufacturing	10,930	11,335	11,754	12,189	12,640	13,108
Mining	285	304	322	342	362	384
Livestock	162	165	168	172	175	179
Irrigation	1,770	1,770	1,770	1,770	1,770	1,770
Randall County Total	**54,764**	**58,783**	**62,676**	**66,440**	**70,224**	**74,018**
Randall County / Red Basin Total	**54,764**	**58,783**	**62,676**	**66,440**	**70,224**	**74,018**
Amarillo	23,923	26,843	29,666	32,394	35,130	37,871
Canyon	3,988	4,434	4,862	5,272	5,684	6,096
Happy*	6	6	5	4	4	3
Lake Tanglewood	254	205	166	133	107	85
Siesta Estates	119	134	149	162	176	190
County-Other	5,018	5,645	6,254	6,841	7,427	8,012
Manufacturing	1,236	1,282	1,329	1,378	1,429	1,482
Livestock	2,778	2,792	2,803	2,814	2,825	2,837
Irrigation	17,442	17,442	17,442	17,442	17,442	17,442
Roberts County Total	**10,845**	**10,846**	**10,851**	**10,858**	**10,867**	**10,876**
Roberts County / Canadian Basin Total	**10,348**	**10,348**	**10,354**	**10,361**	**10,369**	**10,378**
Miami	180	172	168	165	164	162
County-Other	30	29	29	29	29	29
Mining	684	684	684	684	684	684
Livestock	368	377	387	397	406	417
Irrigation	9,086	9,086	9,086	9,086	9,086	9,086
Roberts County / Red Basin Total	**497**	**498**	**497**	**497**	**498**	**498**
County-Other	3	3	2	2	2	2
Livestock	16	17	17	17	18	18
Irrigation	478	478	478	478	478	478
Sherman County Total	**314,269**	**314,373**	**275,903**	**245,701**	**211,293**	**188,194**
Sherman County / Canadian Basin Total	**314,269**	**314,373**	**275,903**	**245,701**	**211,293**	**188,194**
Stratford	567	555	537	515	493	472

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DRAFT Region A Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Texhoma	85	83	80	77	74	71
County-Other	116	113	109	105	101	96
Manufacturing	2	2	2	2	2	2
Mining	7	7	7	7	7	7
Livestock	3,970	4,091	4,159	4,228	4,300	4,373
Irrigation	309,522	309,522	271,009	240,767	206,316	183,173
Wheeler County Total	**23,346**	**23,356**	**23,342**	**23,333**	**23,324**	**23,316**
Wheeler County / Red Basin Total	**23,346**	**23,356**	**23,342**	**23,333**	**23,324**	**23,316**
Shamrock Municipal Water System	282	274	266	260	255	250
Wheeler	435	422	407	395	382	370
County-Other	255	245	235	226	216	206
Mining	4,156	4,156	4,157	4,157	4,158	4,158
Livestock	1,305	1,346	1,364	1,382	1,400	1,419
Irrigation	16,913	16,913	16,913	16,913	16,913	16,913
Region A Demand Total	**2,154,499**	**2,162,587**	**2,033,060**	**1,920,673**	**1,816,340**	**1,741,572**

*A single asterisk next to a WUG's name denotes that the WUG is split by more than one planning region.

DRAFT Region A Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Groundwater Source Availability Total				**3,560,201**	**3,331,121**	**3,061,178**	**2,804,958**	**2,550,514**	**2,319,402**
Blaine Aquifer	Childress	Red	Fresh	23,510	23,510	23,510	23,510	23,510	23,510
Blaine Aquifer	Collingsworth	Red	Fresh	2,054	2,054	2,054	2,054	2,054	2,054
Blaine Aquifer	Hall	Red	Fresh	5,840	5,840	5,840	5,840	5,840	5,840
Blaine Aquifer	Wheeler	Red	Fresh	0	0	0	0	0	0
Dockum Aquifer	Armstrong	Red	Fresh	7,937	8,343	8,822	9,070	9,125	9,135
Dockum Aquifer	Carson	Canadian	Fresh	0	0	0	0	0	0
Dockum Aquifer	Carson	Red	Fresh	6	6	6	6	6	6
Dockum Aquifer	Dallam	Canadian	Fresh	15,522	14,700	14,019	13,513	12,895	12,415
Dockum Aquifer	Hartley	Canadian	Fresh	64,591	64,147	60,766	56,662	52,208	48,142
Dockum Aquifer	Moore	Canadian	Fresh	5,959	6,003	5,680	5,425	5,119	4,838
Dockum Aquifer	Oldham	Canadian	Fresh	153,694	145,814	135,269	124,727	114,427	105,188
Dockum Aquifer	Oldham	Red	Fresh	93	111	124	134	142	153
Dockum Aquifer	Potter	Canadian	Fresh	38,004	38,158	37,268	36,186	34,990	33,815
Dockum Aquifer	Potter	Red	Fresh	2,352	2,101	2,010	1,976	1,943	1,928
Dockum Aquifer	Randall	Red	Fresh	37,967	41,760	39,930	36,248	28,759	25,176
Dockum Aquifer	Sherman	Canadian	Fresh	416	310	288	293	288	291
Ogallala and Rita Blanca Aquifers	Dallam	Canadian	Fresh	269,575	228,726	194,888	165,787	144,360	128,259
Ogallala and Rita Blanca Aquifers	Hartley	Canadian	Fresh	286,610	223,388	184,199	157,553	136,012	118,786
Ogallala Aquifer	Armstrong	Red	Fresh	56,439	48,764	42,118	36,270	31,653	27,923
Ogallala Aquifer	Carson	Canadian	Fresh	68,193	66,220	62,132	57,975	54,708	49,565
Ogallala Aquifer	Carson	Red	Fresh	97,831	93,536	87,636	83,276	79,657	72,209

* Salinity field indicates whether the source availability is considered ‘fresh’ (less than 1,000 mg/L), ‘brackish’ (1,000 to 10,000 mg/L), ‘saline’ (10,001 mg/L to 34,999 mg/L), or ‘seawater’ (35,000 mg/L or greater). Sources can also be labeled as ‘fresh/brackish’ or ‘brackish/saline’, if a combination of the salinity types is appropriate.

** Since reservoir sources can exist across multiple counties, the county field value, ‘reservoir’ is applied to all reservoir sources.

DRAFT Region A Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Ogallala Aquifer	Collingsworth	Red	Fresh	0	0	0	0	0	0
Ogallala Aquifer	Donley	Red	Fresh	78,267	77,157	72,601	67,032	60,915	53,337
Ogallala Aquifer	Gray	Canadian	Fresh	46,240	43,480	39,643	36,480	33,394	30,628
Ogallala Aquifer	Gray	Red	Fresh	135,408	130,122	120,739	110,565	100,408	91,308
Ogallala Aquifer	Hansford	Canadian	Fresh	295,700	281,612	264,290	247,744	229,800	211,464
Ogallala Aquifer	Hemphill	Canadian	Fresh	24,975	29,168	32,388	34,729	36,110	37,074
Ogallala Aquifer	Hemphill	Red	Fresh	20,841	23,040	23,233	23,310	23,147	23,103
Ogallala Aquifer	Hutchinson	Canadian	Fresh	123,745	118,005	110,304	103,014	96,847	90,893
Ogallala Aquifer	Lipscomb	Canadian	Fresh	270,819	263,478	249,968	235,561	218,975	201,984
Ogallala Aquifer	Moore	Canadian	Fresh	149,426	142,152	129,861	113,256	94,363	78,645
Ogallala Aquifer	Ochiltree	Canadian	Fresh	259,973	247,274	231,502	215,617	199,324	181,295
Ogallala Aquifer	Oldham	Canadian	Fresh	34,871	32,845	28,578	23,948	19,789	16,869
Ogallala Aquifer	Oldham	Red	Fresh	4,196	3,347	2,641	2,096	1,604	1,172
Ogallala Aquifer	Potter	Canadian	Fresh	14,672	13,137	11,036	9,214	7,648	6,337
Ogallala Aquifer	Potter	Red	Fresh	10,111	8,815	7,490	6,027	4,417	3,286
Ogallala Aquifer	Randall	Red	Fresh	70,551	60,509	50,310	41,377	34,191	28,047
Ogallala Aquifer	Roberts	Canadian	Fresh	386,950	372,064	346,908	322,461	297,068	267,425
Ogallala Aquifer	Roberts	Red	Fresh	22,350	22,866	22,427	21,648	20,461	19,169
Ogallala Aquifer	Sherman	Canadian	Fresh	287,657	261,521	226,142	198,338	166,675	145,399
Ogallala Aquifer	Wheeler	Red	Fresh	132,615	132,787	128,472	121,852	114,269	106,929
Other Aquifer	Armstrong	Red	Fresh/ Brackish	370	370	370	370	370	370
Other Aquifer	Childress	Red	Fresh/ Brackish	233	233	233	233	233	233

* Salinity field indicates whether the source availability is considered ‘fresh’ (less than 1,000 mg/L), ‘brackish’ (1,000 to 10,000 mg/L), ‘saline’ (10,001 mg/L to 34,999 mg/L), or ‘seawater’ (35,000 mg/L or greater). Sources can also be labeled as ‘fresh/brackish’ or ‘brackish/saline’, if a combination of the salinity types is appropriate.

** Since reservoir sources can exist across multiple counties, the county field value, ‘reservoir’ is applied to all reservoir sources.

DRAFT Region A Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Other Aquifer	Collingsworth	Red	Fresh/ Brackish	309	309	309	309	309	309
Other Aquifer	Donley	Red	Fresh/ Brackish	479	479	479	479	479	479
Other Aquifer	Hall	Red	Fresh/ Brackish	1,086	1,086	1,086	1,086	1,086	1,086
Other Aquifer	Wheeler	Red	Fresh/ Brackish	276	276	276	276	276	276
Seymour Aquifer	Childress	Red	Fresh	3,245	3,307	3,307	3,307	3,296	3,296
Seymour Aquifer	Collingsworth	Red	Fresh	31,492	28,579	27,165	22,334	22,769	29,639
Seymour Aquifer	Hall	Red	Fresh	16,751	19,612	22,861	25,790	24,595	20,117
Reuse Source Availability Total				**21,147**	**21,151**	**21,150**	**21,146**	**21,142**	**21,139**
Direct Reuse	Carson	Red	Fresh	0	0	0	0	0	0
Direct Reuse	Childress	Red	Fresh	127	131	130	126	122	119
Direct Reuse	Collingsworth	Red	Fresh	0	0	0	0	0	0
Direct Reuse	Gray	Canadian	Fresh	220	220	220	220	220	220
Direct Reuse	Hall	Red	Fresh	100	100	100	100	100	100
Direct Reuse	Hutchinson	Canadian	Fresh	1,100	1,100	1,100	1,100	1,100	1,100
Direct Reuse	Potter	Canadian	Fresh	15,700	15,700	15,700	15,700	15,700	15,700
Direct Reuse	Potter	Red	Fresh	3,100	3,100	3,100	3,100	3,100	3,100
Direct Reuse	Randall	Red	Fresh	0	0	0	0	0	0
Direct Reuse	Wheeler	Red	Fresh	0	0	0	0	0	0
Direct Reuse	Lipscomb	Canadian	Fresh	300	300	300	300	300	300
Water Recycling	Moore	Canadian	Fresh	500	500	500	500	500	500
Surface Water Source Availability Total				**42,791**	**42,621**	**42,451**	**42,243**	**42,034**	**41,826**

* Salinity field indicates whether the source availability is considered ‘fresh’ (less than 1,000 mg/L), ‘brackish’ (1,000 to 10,000 mg/L), ‘saline’ (10,001 mg/L to 34,999 mg/L), or ‘seawater’ (35,000 mg/L or greater). Sources can also be labeled as ‘fresh/brackish’ or ‘brackish/saline’, if a combination of the salinity types is appropriate.

** Since reservoir sources can exist across multiple counties, the county field value, ‘reservoir’ is applied to all reservoir sources.

DRAFT Region A Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Baylor Lake/Reservoir	Reservoir**	Red	Fresh	0	0	0	0	0	0
Canadian Livestock Local Supply	Carson	Canadian	Fresh	42	42	42	42	42	42
Canadian Livestock Local Supply	Dallam	Canadian	Fresh	1,786	1,786	1,786	1,786	1,786	1,786
Canadian Livestock Local Supply	Gray	Canadian	Fresh	150	150	150	150	150	150
Canadian Livestock Local Supply	Hansford	Canadian	Fresh	1,958	1,958	1,958	1,958	1,958	1,958
Canadian Livestock Local Supply	Hartley	Canadian	Fresh	3,480	3,480	3,480	3,480	3,480	3,480
Canadian Livestock Local Supply	Hemphill	Canadian	Fresh	132	132	132	132	132	132
Canadian Livestock Local Supply	Hutchinson	Canadian	Fresh	164	164	164	164	164	164
Canadian Livestock Local Supply	Lipscomb	Canadian	Fresh	168	168	168	168	168	168
Canadian Livestock Local Supply	Moore	Canadian	Fresh	823	823	823	823	823	823
Canadian Livestock Local Supply	Ochiltree	Canadian	Fresh	443	443	443	443	443	443
Canadian Livestock Local Supply	Oldham	Canadian	Fresh	553	553	553	553	553	553
Canadian Livestock Local Supply	Potter	Canadian	Fresh	137	137	137	137	137	137
Canadian Livestock Local Supply	Roberts	Canadian	Fresh	59	59	59	59	59	59
Canadian Livestock Local Supply	Sherman	Canadian	Fresh	646	646	646	646	646	646
Canadian Run-of-River	Gray	Canadian	Fresh	1	1	1	1	1	1
Canadian Run-of-River	Hansford	Canadian	Fresh	22	22	22	22	22	22
Canadian Run-of-River	Hutchinson	Canadian	Fresh	98	98	98	98	98	98
Canadian Run-of-River	Lipscomb	Canadian	Fresh	66	66	66	66	66	66
Canadian Run-of-River	Moore	Canadian	Fresh	7	7	7	7	7	7
Canadian Run-of-River	Roberts	Canadian	Fresh	72	72	72	72	72	72

* Salinity field indicates whether the source availability is considered ‘fresh’ (less than 1,000 mg/L), ‘brackish’ (1,000 to 10,000 mg/L), ‘saline’ (10,001 mg/L to 34,999 mg/L), or ‘seawater’ (35,000 mg/L or greater). Sources can also be labeled as ‘fresh/brackish’ or ‘brackish/saline’, if a combination of the salinity types is appropriate.

** Since reservoir sources can exist across multiple counties, the county field value, ‘reservoir’ is applied to all reservoir sources.

DRAFT Region A Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Canadian Run-of-River	Sherman	Canadian	Fresh	32	32	32	32	32	32
Greenbelt Lake/Reservoir	Reservoir**	Red	Fresh	3,140	2,970	2,800	2,592	2,383	2,175
Meredith Lake/Reservoir	Reservoir**	Canadian	Fresh	24,600	24,600	24,600	24,600	24,600	24,600
Palo Duro Lake/Reservoir	Reservoir**	Canadian	Fresh	0	0	0	0	0	0
Red Livestock Local Supply	Armstrong	Red	Fresh	79	79	79	79	79	79
Red Livestock Local Supply	Carson	Red	Fresh	54	54	54	54	54	54
Red Livestock Local Supply	Childress	Red	Fresh	38	38	38	38	38	38
Red Livestock Local Supply	Collingsworth	Red	Fresh	18	18	18	18	18	18
Red Livestock Local Supply	Donley	Red	Fresh	240	240	240	240	240	240
Red Livestock Local Supply	Gray	Red	Fresh	450	450	450	450	450	450
Red Livestock Local Supply	Hall	Red	Fresh	128	128	128	128	128	128
Red Livestock Local Supply	Hemphill	Red	Fresh	91	91	91	91	91	91
Red Livestock Local Supply	Oldham	Red	Fresh	184	184	184	184	184	184
Red Livestock Local Supply	Potter	Red	Fresh	17	17	17	17	17	17
Red Livestock Local Supply	Randall	Red	Fresh	908	908	908	908	908	908
Red Livestock Local Supply	Roberts	Red	Fresh	7	7	7	7	7	7
Red Livestock Local Supply	Wheeler	Red	Fresh	437	437	437	437	437	437
Red Run-of-River	Carson	Red	Fresh	69	69	69	69	69	69
Red Run-of-River	Childress	Red	Fresh	6	6	6	6	6	6
Red Run-of-River	Collingsworth	Red	Fresh	694	694	694	694	694	694

* Salinity field indicates whether the source availability is considered ‘fresh’ (less than 1,000 mg/L), ‘brackish’ (1,000 to 10,000 mg/L), ‘saline’ (10,001 mg/L to 34,999 mg/L), or ‘seawater’ (35,000 mg/L or greater). Sources can also be labeled as ‘fresh/brackish’ or ‘brackish/saline’, if a combination of the salinity types is appropriate.

** Since reservoir sources can exist across multiple counties, the county field value, ‘reservoir’ is applied to all reservoir sources.

DRAFT Region A Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Red Run-of-River	Donley	Red	Fresh	177	177	177	177	177	177
Red Run-of-River	Gray	Red	Fresh	24	24	24	24	24	24
Red Run-of-River	Hall	Red	Fresh	12	12	12	12	12	12
Red Run-of-River	Randall	Red	Fresh	124	124	124	124	124	124
Red Run-of-River	Wheeler	Red	Fresh	455	455	455	455	455	455

Region A Source Availability Total	**3,624,139**	**3,394,893**	**3,124,779**	**2,868,347**	**2,613,690**	**2,382,367**

* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.

** Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Armstrong County WUG Total			**8,687**	**7,781**	**7,099**	**6,574**	**5,971**	**5,455**
Armstrong County / Red Basin WUG Total			**8,687**	**7,781**	**7,099**	**6,574**	**5,971**	**5,455**
Claude Municipal Water System	A	Ogallala Aquifer | Armstrong County	322	316	314	312	310	308
County-Other	A	Dockum Aquifer | Armstrong County	17	16	16	16	16	16
County-Other	A	Ogallala Aquifer | Armstrong County	71	70	69	68	67	66
Livestock	A	Dockum Aquifer | Armstrong County	104	104	104	104	104	104
Livestock	A	Local Surface Water Supply	79	79	79	79	79	79
Livestock	A	Ogallala Aquifer | Armstrong County	345	353	361	369	377	385
Livestock	A	Other Aquifer | Armstrong County	28	28	28	28	28	28
Irrigation	A	Dockum Aquifer | Armstrong County	3	3	3	3	3	3
Irrigation	A	Ogallala Aquifer | Armstrong County	7,718	6,812	6,125	5,595	4,987	4,466
Carson County WUG Total			**104,936**	**110,413**	**106,363**	**101,147**	**101,151**	**101,178**
Carson County / Canadian Basin WUG Total			**26,926**	**28,331**	**27,260**	**25,887**	**25,864**	**25,844**
Fritch	A	Ogallala Aquifer | Carson County	99	100	101	98	96	92
White Deer	A	Ogallala Aquifer | Carson County	93	84	75	67	61	54
County-Other	A	Ogallala Aquifer | Carson County	90	80	68	55	41	25
Manufacturing	A	Ogallala Aquifer | Carson County	37	38	39	41	42	44
Livestock	A	Local Surface Water Supply	53	53	53	53	53	53
Livestock	A	Ogallala Aquifer | Carson County	187	191	194	198	202	206
Irrigation	A	Dockum Aquifer | Carson County	1	1	1	1	1	1
Irrigation	A	Ogallala Aquifer | Carson County	26,348	27,766	26,711	25,356	25,350	25,351
Irrigation	A	Red Run-of-River	18	18	18	18	18	18

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Carson County / Red Basin WUG Total			**78,010**	**82,082**	**79,103**	**75,260**	**75,287**	**75,334**
Groom Municipal Water System	A	Ogallala Aquifer | Carson County	182	168	168	168	168	168
Panhandle Municipal Water System	A	Ogallala Aquifer | Carson County	503	503	509	511	517	527
White Deer	A	Ogallala Aquifer | Carson County	137	123	111	100	89	81
County-Other	A	Ogallala Aquifer | Carson County	117	103	87	70	52	33
Manufacturing	A	Ogallala Aquifer | Carson County	1,460	1,514	1,570	1,628	1,689	1,751
Mining	A	Ogallala Aquifer | Carson County	3	3	3	3	3	3
Livestock	A	Local Surface Water Supply	43	43	43	43	43	43
Livestock	A	Ogallala Aquifer | Carson County	150	152	156	159	162	165
Irrigation	A	Dockum Aquifer | Carson County	2	2	2	2	2	2
Irrigation	A	Ogallala Aquifer | Carson County	75,362	79,420	76,403	72,525	72,511	72,510
Irrigation	A	Red Run-of-River	51	51	51	51	51	51
Childress County WUG Total			**16,976**	**16,980**	**16,955**	**16,935**	**16,913**	**16,891**
Childress County / Red Basin WUG Total			**16,976**	**16,980**	**16,955**	**16,935**	**16,913**	**16,891**
Childress	A	Greenbelt Lake/Reservoir	844	859	847	825	804	790
Childress	A	Ogallala Aquifer | Donley County	430	456	449	436	420	396
Childress	B	Seymour Aquifer | Hardeman County	0	0	0	0	0	0
Red River Authority of Texas*	A	Greenbelt Lake/Reservoir	253	233	229	235	242	252
Red River Authority of Texas*	A	Ogallala Aquifer | Donley County	129	125	123	126	127	126
Red River Authority of Texas*	B	Red Indirect Reuse	0	0	0	0	0	0
Red River Authority of Texas*	B	Seymour Aquifer | Hardeman County	0	0	0	0	0	0
Red River Authority of Texas*	B	Trinity Aquifer | Montague County	0	0	0	0	0	0

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
County-Other	A	Other Aquifer | Childress County	1	1	1	1	1	1
County-Other	A	Seymour Aquifer | Childress County	20	7	7	13	20	27
Livestock	A	Blaine Aquifer | Childress County	105	105	105	105	105	105
Livestock	A	Local Surface Water Supply	38	38	38	38	38	38
Livestock	A	Other Aquifer | Childress County	159	159	159	159	159	159
Livestock	A	Seymour Aquifer | Childress County	26	26	26	26	26	26
Irrigation	A	Blaine Aquifer | Childress County	14,627	14,623	14,624	14,628	14,632	14,635
Irrigation	A	Direct Reuse	127	131	130	126	122	119
Irrigation	A	Other Aquifer | Childress County	72	72	72	72	72	72
Irrigation	A	Red Run-of-River	6	6	6	6	6	6
Irrigation	A	Seymour Aquifer | Childress County	139	139	139	139	139	139
Collingsworth County WUG Total			**34,477**	**31,564**	**30,150**	**25,318**	**25,753**	**32,623**
Collingsworth County / Red Basin WUG Total			**34,477**	**31,564**	**30,150**	**25,318**	**25,753**	**32,623**
Red River Authority of Texas*	A	Greenbelt Lake/Reservoir	11	10	10	10	10	11
Red River Authority of Texas*	A	Ogallala Aquifer | Donley County	5	6	6	6	6	5
Red River Authority of Texas*	B	Red Indirect Reuse	0	0	0	0	0	0
Red River Authority of Texas*	A	Seymour Aquifer | Collingsworth County	74	72	67	63	59	56
Red River Authority of Texas*	B	Seymour Aquifer | Hardeman County	0	0	0	0	0	0
Red River Authority of Texas*	B	Trinity Aquifer | Montague County	0	0	0	0	0	0
Wellington Municipal Water System	A	Seymour Aquifer | Collingsworth County	358	348	328	313	298	282
County-Other	A	Blaine Aquifer | Collingsworth County	6	6	6	5	5	5

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
County-Other	A	Other Aquifer | Collingsworth County	1	1	1	1	1	1
County-Other	A	Seymour Aquifer | Collingsworth County	97	93	87	83	79	74
Livestock	A	Blaine Aquifer | Collingsworth County	378	378	378	378	378	378
Livestock	A	Local Surface Water Supply	18	18	18	18	18	18
Livestock	A	Other Aquifer | Collingsworth County	47	58	69	81	93	105
Livestock	A	Seymour Aquifer | Collingsworth County	19	19	19	19	19	19
Irrigation	A	Blaine Aquifer | Collingsworth County	1,564	1,564	1,564	1,564	1,564	1,564
Irrigation	A	Other Aquifer | Collingsworth County	261	250	239	227	215	203
Irrigation	A	Red Run-of-River	694	694	694	694	694	694
Irrigation	A	Seymour Aquifer | Collingsworth County	30,944	28,047	26,664	21,856	22,314	29,208
Dallam County WUG Total			**227,958**	**192,684**	**163,457**	**139,044**	**122,471**	**109,851**
Dallam County / Canadian Basin WUG Total			**227,958**	**192,684**	**163,457**	**139,044**	**122,471**	**109,851**
Dalhart	A	Dockum Aquifer | Dallam County	14	12	12	11	10	9
Dalhart	A	Ogallala and Rita Blanca Aquifers | Dallam County	1,678	1,783	1,887	2,000	2,117	2,239
Texline	A	Ogallala and Rita Blanca Aquifers | Dallam County	166	171	177	182	188	195
County-Other	A	Ogallala and Rita Blanca Aquifers | Dallam County	144	144	142	121	98	72
Manufacturing	A	Ogallala and Rita Blanca Aquifers | Dallam County	1,333	1,382	1,433	1,486	1,541	1,598
Livestock	A	Local Surface Water Supply	1,786	1,786	1,786	1,786	1,786	1,786
Livestock	A	Ogallala and Rita Blanca Aquifers | Dallam County	3,436	3,689	3,757	3,827	3,898	3,971
Irrigation	A	Dockum Aquifer | Dallam County	12,583	11,877	11,271	10,816	10,244	9,789
Irrigation	A	Ogallala and Rita Blanca Aquifers | Dallam County	206,818	171,840	142,992	118,815	102,589	90,192

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Donley County WUG Total			**34,147**	**34,114**	**34,079**	**34,059**	**34,038**	**34,016**
Donley County / Red Basin WUG Total			**34,147**	**34,114**	**34,079**	**34,059**	**34,038**	**34,016**
Clarendon	A	Greenbelt Lake/Reservoir	197	184	171	164	157	151
Clarendon	A	Ogallala Aquifer | Donley County	101	97	91	87	82	76
Clarendon	B	Seymour Aquifer | Hardeman County	0	0	0	0	0	0
Red River Authority of Texas*	A	Greenbelt Lake/Reservoir	20	20	19	20	20	20
Red River Authority of Texas*	A	Ogallala Aquifer | Donley County	62	56	51	47	44	40
Red River Authority of Texas*	B	Red Indirect Reuse	0	0	0	0	0	0
Red River Authority of Texas*	B	Seymour Aquifer | Hardeman County	0	0	0	0	0	0
Red River Authority of Texas*	B	Trinity Aquifer | Montague County	0	0	0	0	0	0
County-Other	A	Greenbelt Lake/Reservoir	37	37	37	37	37	37
County-Other	A	Ogallala Aquifer | Donley County	107	97	87	81	75	69
County-Other	B	Seymour Aquifer | Hardeman County	0	0	0	0	0	0
Livestock	A	Local Surface Water Supply	240	240	240	240	240	240
Livestock	A	Ogallala Aquifer | Donley County	671	671	671	671	671	671
Livestock	A	Other Aquifer | Donley County	272	272	272	272	272	272
Irrigation	A	Ogallala Aquifer | Donley County	32,263	32,263	32,263	32,263	32,263	32,263
Irrigation	A	Red Run-of-River	177	177	177	177	177	177
Gray County WUG Total			**43,841**	**43,408**	**42,903**	**42,595**	**42,305**	**42,185**
Gray County / Canadian Basin WUG Total			**14,708**	**14,237**	**13,753**	**13,482**	**13,238**	**13,174**
Pampa Municipal Water System	A	Meredith Lake/Reservoir	407	231	482	512	547	545
Pampa Municipal Water System	A	Ogallala Aquifer | Gray County	1,724	1,431	1,135	903	713	713
Pampa Municipal Water System	A	Ogallala Aquifer | Roberts County	1,655	1,613	1,189	1,154	1,109	1,105

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
County-Other	A	Ogallala Aquifer | Gray County	318	334	306	257	197	123
Manufacturing	A	Ogallala Aquifer | Gray County	516	530	541	555	569	584
Livestock	A	Local Surface Water Supply	155	155	155	155	155	155
Livestock	A	Ogallala Aquifer | Gray County	325	335	337	338	340	341
Irrigation	A	Canadian Run-of-River	0	0	0	0	0	0
Irrigation	A	Direct Reuse	57	57	57	57	57	57
Irrigation	A	Ogallala Aquifer | Gray County	9,545	9,545	9,545	9,545	9,545	9,545
Irrigation	A	Red Run-of-River	6	6	6	6	6	6
Gray County / Red Basin WUG Total			**29,133**	**29,171**	**29,150**	**29,113**	**29,067**	**29,011**
McLean Municipal Water Supply	A	Ogallala Aquifer | Gray County	170	168	162	156	149	143
County-Other	A	Ogallala Aquifer | Gray County	238	249	228	191	147	92
Manufacturing	A	Ogallala Aquifer | Gray County	5	4	6	6	6	6
Livestock	A	Local Surface Water Supply	445	445	445	445	445	445
Livestock	A	Ogallala Aquifer | Gray County	931	961	965	971	976	981
Irrigation	A	Canadian Run-of-River	1	1	1	1	1	1
Irrigation	A	Direct Reuse	163	163	163	163	163	163
Irrigation	A	Ogallala Aquifer | Gray County	27,162	27,162	27,162	27,162	27,162	27,162
Irrigation	A	Red Run-of-River	18	18	18	18	18	18
Hall County WUG Total			**18,473**	**21,318**	**24,548**	**27,460**	**26,248**	**21,753**
Hall County / Red Basin WUG Total			**18,473**	**21,318**	**24,548**	**27,460**	**26,248**	**21,753**
Memphis	A	Greenbelt Lake/Reservoir	25	24	24	24	24	25
Memphis	A	Ogallala Aquifer | Donley County	271	256	237	220	203	185
Red River Authority of Texas*	A	Greenbelt Lake/Reservoir	66	65	65	65	66	67
Red River Authority of Texas*	A	Ogallala Aquifer | Donley County	34	35	35	35	34	33

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Red River Authority of Texas*	B	Red Indirect Reuse	0	0	0	0	0	0
Red River Authority of Texas*	A	Seymour Aquifer | Hall County	10	10	10	13	14	30
Red River Authority of Texas*	B	Seymour Aquifer | Hardeman County	0	0	0	0	0	0
Red River Authority of Texas*	B	Trinity Aquifer | Montague County	0	0	0	0	0	0
Turkey Municipal Water System	A	Seymour Aquifer | Hall County	89	84	75	68	62	57
County-Other	A	Seymour Aquifer | Hall County	91	85	74	68	61	54
Manufacturing	A	Seymour Aquifer | Hall County	1	1	1	1	1	1
Livestock	A	Blaine Aquifer | Hall County	0	0	0	0	0	0
Livestock	A	Local Surface Water Supply	128	128	128	128	128	128
Livestock	A	Other Aquifer | Hall County	196	205	213	222	231	240
Livestock	A	Seymour Aquifer | Hall County	17	17	17	17	17	17
Irrigation	A	Direct Reuse	100	100	100	100	100	100
Irrigation	A	Other Aquifer | Hall County	890	881	873	864	855	846
Irrigation	A	Red Run-of-River	12	12	12	12	12	12
Irrigation	A	Seymour Aquifer | Hall County	16,543	19,415	22,684	25,623	24,440	19,958
Hansford County WUG Total			**182,273**	**182,388**	**182,505**	**182,627**	**182,751**	**182,879**
Hansford County / Canadian Basin WUG Total			**182,273**	**182,388**	**182,505**	**182,627**	**182,751**	**182,879**
Gruver	A	Ogallala Aquifer | Hansford County	301	301	301	301	301	301
Spearman Municipal Water System	A	Ogallala Aquifer | Hansford County	1,000	1,000	1,000	1,000	1,000	1,000
County-Other	A	Ogallala Aquifer | Hansford County	129	131	132	134	136	138
Manufacturing	A	Ogallala Aquifer | Hansford County	359	372	386	400	415	430

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Mining	A	Ogallala Aquifer | Hansford County	93	93	93	93	93	93
Livestock	A	Local Surface Water Supply	1,958	1,958	1,958	1,958	1,958	1,958
Livestock	A	Ogallala Aquifer | Hansford County	2,747	2,847	2,949	3,055	3,162	3,273
Irrigation	A	Canadian Run-of-River	22	22	22	22	22	22
Irrigation	A	Ogallala Aquifer | Hansford County	175,664	175,664	175,664	175,664	175,664	175,664
Hartley County WUG Total			**238,884**	**181,992**	**149,366**	**128,010**	**110,860**	**97,198**
Hartley County / Canadian Basin WUG Total			**238,884**	**181,992**	**149,366**	**128,010**	**110,860**	**97,198**
Dalhart	A	Dockum Aquifer | Dallam County	8	7	6	6	5	5
Dalhart	A	Ogallala and Rita Blanca Aquifers | Dallam County	943	965	996	1,037	1,082	1,133
Hartley WSC	A	Ogallala and Rita Blanca Aquifers | Hartley County	168	163	160	159	158	157
County-Other	A	Ogallala and Rita Blanca Aquifers | Hartley County	323	304	277	240	199	154
Mining	A	Ogallala and Rita Blanca Aquifers | Hartley County	85	85	85	85	85	85
Livestock	A	Dockum Aquifer | Hartley County	1,128	1,128	1,128	1,128	1,128	1,128
Livestock	A	Local Surface Water Supply	3,480	3,480	3,480	3,480	3,480	3,480
Livestock	A	Ogallala and Rita Blanca Aquifers | Hartley County	6,193	6,193	6,193	6,193	6,193	6,193
Irrigation	A	Dockum Aquifer | Hartley County	8,043	7,327	6,740	6,298	5,924	5,647
Irrigation	A	Ogallala and Rita Blanca Aquifers | Hartley County	218,513	162,340	130,301	109,384	92,606	79,216
Hemphill County WUG Total			**9,320**	**9,334**	**9,345**	**9,359**	**9,373**	**9,387**
Hemphill County / Canadian Basin WUG Total			**6,461**	**6,470**	**6,476**	**6,484**	**6,492**	**6,502**
Canadian	A	Ogallala Aquifer | Hemphill County	675	675	675	675	675	675
County-Other	A	Ogallala Aquifer | Hemphill County	78	78	75	74	73	72
Mining	A	Ogallala Aquifer | Hemphill County	1,011	1,011	1,011	1,011	1,011	1,011

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Livestock	A	Local Surface Water Supply	131	131	131	131	131	132
Livestock	A	Ogallala Aquifer | Hemphill County	511	520	529	538	547	557
Irrigation	A	Ogallala Aquifer | Hemphill County	4,055	4,055	4,055	4,055	4,055	4,055
Hemphill County / Red Basin WUG Total			**2,859**	**2,864**	**2,869**	**2,875**	**2,881**	**2,885**
County-Other	A	Ogallala Aquifer | Hemphill County	40	39	38	38	37	36
Manufacturing	A	Ogallala Aquifer | Hemphill County	2	2	2	2	2	2
Mining	A	Ogallala Aquifer | Hemphill County	544	544	544	544	544	544
Livestock	A	Local Surface Water Supply	92	92	92	92	92	91
Livestock	A	Ogallala Aquifer | Hemphill County	359	365	371	377	384	390
Irrigation	A	Ogallala Aquifer | Hemphill County	1,822	1,822	1,822	1,822	1,822	1,822
Hutchinson County WUG Total			**86,782**	**87,134**	**87,463**	**87,805**	**88,021**	**84,704**
Hutchinson County / Canadian Basin WUG Total			**86,782**	**87,134**	**87,463**	**87,805**	**88,021**	**84,704**
Borger	A	Meredith Lake/Reservoir	177	240	329	347	356	398
Borger	A	Ogallala Aquifer | Hutchinson County	2,485	2,231	1,976	1,756	1,594	1,429
Borger	A	Ogallala Aquifer | Roberts County	907	887	811	782	721	719
Fritch	A	Ogallala Aquifer | Carson County	883	811	744	660	585	519
Stinnett	A	Ogallala Aquifer | Hutchinson County	380	381	380	381	209	167
TCW Supply	A	Ogallala Aquifer | Hutchinson County	942	879	821	765	713	667
County-Other	A	Ogallala Aquifer | Hutchinson County	197	219	216	203	180	147
Manufacturing	A	Canadian Run-of-River	2	2	2	2	2	2
Manufacturing	A	Direct Reuse	1,100	1,100	1,100	1,100	1,100	1,100
Manufacturing	A	Meredith Lake/Reservoir	552	793	1,161	1,311	1,442	1,721
Manufacturing	A	Ogallala Aquifer | Hutchinson County	13,738	14,076	14,480	14,960	15,618	14,125

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Manufacturing	A	Ogallala Aquifer | Roberts County	2,839	2,935	2,863	2,958	2,921	3,110
Mining	A	Ogallala Aquifer | Hutchinson County	67	67	67	67	67	67
Livestock	A	Local Surface Water Supply	164	164	164	164	164	164
Livestock	A	Ogallala Aquifer | Hutchinson County	483	483	483	483	483	483
Irrigation	A	Canadian Run-of-River	96	96	96	96	96	96
Irrigation	A	Ogallala Aquifer | Hutchinson County	61,770	61,770	61,770	61,770	61,770	59,790
Lipscomb County WUG Total			**46,727**	**46,698**	**46,649**	**46,605**	**46,570**	**46,527**
Lipscomb County / Canadian Basin WUG Total			**46,727**	**46,698**	**46,649**	**46,605**	**46,570**	**46,527**
Booker	A	Ogallala Aquifer | Lipscomb County	125	117	104	92	82	71
Booker	A	Ogallala Aquifer | Ochiltree County	139	122	104	87	75	62
Darrouzett	A	Ogallala Aquifer | Lipscomb County	84	79	74	69	64	59
Follett	A	Ogallala Aquifer | Lipscomb County	95	84	74	67	62	59
Higgins Municipal Water System	A	Ogallala Aquifer | Lipscomb County	87	82	75	70	65	59
County-Other	A	Ogallala Aquifer | Lipscomb County	183	180	173	168	160	151
Manufacturing	A	Direct Reuse	300	300	300	300	300	300
Manufacturing	A	Ogallala Aquifer | Lipscomb County	151	158	161	161	163	162
Manufacturing	A	Ogallala Aquifer | Ochiltree County	169	165	160	154	148	139
Mining	A	Ogallala Aquifer | Lipscomb County	1,018	1,018	1,018	1,018	1,018	1,018
Livestock	A	Local Surface Water Supply	168	168	168	168	168	168
Livestock	A	Ogallala Aquifer | Lipscomb County	859	876	889	902	916	930
Irrigation	A	Canadian Run-of-River	66	66	66	66	66	66
Irrigation	A	Ogallala Aquifer | Lipscomb County	43,283	43,283	43,283	43,283	43,283	43,283

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Moore County WUG Total			**145,562**	**137,616**	**126,496**	**111,327**	**94,053**	**80,173**
Moore County / Canadian Basin WUG Total			**145,562**	**137,616**	**126,496**	**111,327**	**94,053**	**80,173**
Cactus Municipal Water System	A	Ogallala Aquifer | Moore County	872	762	663	567	484	413
Dumas	A	Ogallala and Rita Blanca Aquifers | Hartley County	2,699	1,372	853	615	498	438
Dumas	A	Ogallala Aquifer | Moore County	661	662	661	662	639	508
Fritch	A	Ogallala Aquifer | Carson County	33	33	33	32	30	29
Sunray	A	Ogallala Aquifer | Moore County	457	459	457	459	365	353
County-Other	A	Ogallala and Rita Blanca Aquifers | Hartley County	45	23	14	10	9	8
County-Other	A	Ogallala Aquifer | Moore County	216	234	241	237	229	221
Manufacturing	A	Ogallala Aquifer | Moore County	9,847	9,557	9,296	9,068	8,859	8,668
Manufacturing	A	Water Recycling	500	500	500	500	500	500
Mining	A	Ogallala Aquifer | Moore County	33	33	33	33	33	33
Livestock	A	Local Surface Water Supply	823	823	823	823	823	823
Livestock	A	Ogallala Aquifer | Moore County	4,719	4,719	4,719	4,719	4,719	4,719
Irrigation	A	Canadian Run-of-River	7	7	7	7	7	7
Irrigation	A	Dockum Aquifer | Moore County	1,390	1,299	1,150	1,101	1,091	1,126
Irrigation	A	Ogallala Aquifer | Moore County	123,260	117,133	107,046	92,494	75,767	62,327
Ochiltree County WUG Total			**93,812**	**93,936**	**93,961**	**93,894**	**93,741**	**93,604**
Ochiltree County / Canadian Basin WUG Total			**93,812**	**93,936**	**93,961**	**93,894**	**93,741**	**93,604**
Booker	A	Ogallala Aquifer | Lipscomb County	2	2	2	2	2	2
Booker	A	Ogallala Aquifer | Ochiltree County	2	2	2	2	2	2
Perryton Municipal Water System	A	Ogallala Aquifer | Ochiltree County	2,737	2,805	2,789	2,680	2,484	2,304
County-Other	A	Ogallala Aquifer | Ochiltree County	279	291	300	308	317	325

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Manufacturing	A	Ogallala Aquifer | Ochiltree County	34	35	36	37	38	39
Mining	A	Ogallala Aquifer | Ochiltree County	797	797	797	797	797	797
Livestock	A	Local Surface Water Supply	443	443	443	443	443	443
Livestock	A	Ogallala Aquifer | Ochiltree County	2,835	2,878	2,909	2,942	2,975	3,009
Irrigation	A	Ogallala Aquifer | Ochiltree County	86,683	86,683	86,683	86,683	86,683	86,683
Oldham County WUG Total			**7,459**	**7,418**	**7,366**	**7,309**	**7,252**	**6,923**
Oldham County / Canadian Basin WUG Total			**3,158**	**3,125**	**3,085**	**3,040**	**2,996**	**2,885**
Vega	A	Ogallala Aquifer | Oldham County	224	222	215	210	205	200
County-Other	A	Dockum Aquifer | Oldham County	172	145	113	78	43	9
County-Other	A	Ogallala Aquifer | Oldham County	29	24	20	14	8	2
Mining	A	Ogallala Aquifer | Oldham County	312	312	312	312	312	312
Livestock	A	Dockum Aquifer | Oldham County	533	532	533	533	533	532
Livestock	A	Local Surface Water Supply	517	517	517	517	517	517
Livestock	A	Ogallala Aquifer | Oldham County	238	240	242	243	245	246
Irrigation	A	Dockum Aquifer | Oldham County	89	89	89	89	89	89
Irrigation	A	Ogallala Aquifer | Oldham County	1,044	1,044	1,044	1,044	1,044	978
Oldham County / Red Basin WUG Total			**4,301**	**4,293**	**4,281**	**4,269**	**4,256**	**4,038**
County-Other	A	Dockum Aquifer | Oldham County	53	44	35	24	13	2
County-Other	A	Ogallala Aquifer | Oldham County	9	8	6	4	2	0
Mining	A	Ogallala Aquifer | Oldham County	104	104	104	104	104	104
Livestock	A	Dockum Aquifer | Oldham County	226	227	226	226	226	227

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Livestock	A	Local Surface Water Supply	220	220	220	220	220	220
Livestock	A	Ogallala Aquifer | Oldham County	101	102	102	103	103	104
Irrigation	A	Dockum Aquifer | Oldham County	283	283	283	283	283	283
Irrigation	A	Ogallala Aquifer | Oldham County	3,305	3,305	3,305	3,305	3,305	3,098
Potter County WUG Total			**56,251**	**54,303**	**52,310**	**49,551**	**46,973**	**45,695**
Potter County / Canadian Basin WUG Total			**33,320**	**32,298**	**31,217**	**29,783**	**28,476**	**27,722**
Amarillo	A	Dockum Aquifer | Carson County	1	1	1	1	1	1
Amarillo	A	Dockum Aquifer | Potter County	145	137	128	118	108	97
Amarillo	A	Meredith Lake/Reservoir	2,253	2,004	2,120	1,948	1,778	1,600
Amarillo	O	Ogallala and Edwards-Trinity-High Plains Aquifers | Deaf Smith County	23	11	10	0	0	0
Amarillo	A	Ogallala Aquifer | Carson County	3,816	3,548	3,231	2,933	2,686	2,422
Amarillo	A	Ogallala Aquifer | Potter County	617	532	439	353	294	244
Amarillo	A	Ogallala Aquifer | Randall County	172	121	93	74	39	36
Amarillo	A	Ogallala Aquifer | Roberts County	6,368	5,996	5,228	4,394	3,602	3,315
County-Other	A	Dockum Aquifer | Potter County	1,417	1,424	1,424	1,414	1,411	1,415
County-Other	A	Ogallala Aquifer | Potter County	243	246	246	243	242	243
Manufacturing	A	Direct Reuse	94	94	94	94	94	94
Manufacturing	A	Dockum Aquifer | Potter County	6	6	6	6	6	6
Manufacturing	A	Meredith Lake/Reservoir	95	89	101	102	102	101
Manufacturing	O	Ogallala and Edwards-Trinity-High Plains Aquifers | Deaf Smith County	1	0	0	0	0	0
Manufacturing	A	Ogallala Aquifer | Carson County	161	158	154	153	154	152

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Manufacturing	A	Ogallala Aquifer | Potter County	46	44	41	38	37	35
Manufacturing	A	Ogallala Aquifer | Randall County	7	5	4	4	2	2
Manufacturing	A	Ogallala Aquifer | Roberts County	270	267	250	229	206	208
Mining	A	Ogallala Aquifer | Potter County	478	508	539	572	607	643
Steam Electric Power	A	Direct Reuse	15,000	15,000	15,000	15,000	15,000	15,000
Livestock	A	Dockum Aquifer | Potter County	25	25	25	25	25	25
Livestock	A	Local Surface Water Supply	105	105	105	105	105	105
Livestock	A	Ogallala Aquifer | Potter County	276	276	276	276	276	276
Irrigation	A	Direct Reuse	1,078	1,078	1,078	1,078	1,078	1,078
Irrigation	A	Dockum Aquifer | Potter County	263	280	291	298	303	306
Irrigation	A	Ogallala Aquifer | Potter County	360	343	333	325	320	318
Potter County / Red Basin WUG Total			**22,931**	**22,005**	**21,093**	**19,768**	**18,497**	**17,973**
Amarillo	A	Dockum Aquifer | Carson County	1	1	1	0	0	0
Amarillo	A	Dockum Aquifer | Potter County	95	90	84	77	71	64
Amarillo	A	Meredith Lake/Reservoir	1,479	1,315	1,391	1,279	1,167	1,050
Amarillo	O	Ogallala and Edwards-Trinity-High Plains Aquifers | Deaf Smith County	15	7	7	0	0	0
Amarillo	A	Ogallala Aquifer | Carson County	2,506	2,329	2,121	1,925	1,763	1,591
Amarillo	A	Ogallala Aquifer | Potter County	405	349	288	232	193	160
Amarillo	A	Ogallala Aquifer | Randall County	113	79	61	49	26	24
Amarillo	A	Ogallala Aquifer | Roberts County	4,180	3,936	3,432	2,884	2,365	2,176
County-Other	A	Dockum Aquifer | Potter County	795	800	799	793	790	795

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
County-Other	A	Ogallala Aquifer | Potter County	137	137	137	137	137	137
Manufacturing	A	Direct Reuse	1,506	1,506	1,506	1,506	1,506	1,506
Manufacturing	A	Dockum Aquifer | Potter County	99	98	98	99	100	98
Manufacturing	A	Meredith Lake/Reservoir	1,536	1,439	1,632	1,638	1,637	1,618
Manufacturing	O	Ogallala and Edwards-Trinity-High Plains Aquifers | Deaf Smith County	15	8	8	0	0	0
Manufacturing	A	Ogallala Aquifer | Carson County	2,601	2,549	2,488	2,467	2,473	2,451
Manufacturing	A	Ogallala Aquifer | Potter County	743	703	660	620	592	569
Manufacturing	A	Ogallala Aquifer | Randall County	119	87	72	63	37	36
Manufacturing	A	Ogallala Aquifer | Roberts County	4,339	4,306	4,025	3,695	3,316	3,353
Mining	A	Ogallala Aquifer | Potter County	285	304	322	342	362	384
Livestock	A	Dockum Aquifer | Potter County	12	12	12	12	12	12
Livestock	A	Local Surface Water Supply	49	49	49	49	49	49
Livestock	A	Ogallala Aquifer | Potter County	130	130	130	130	130	130
Irrigation	A	Direct Reuse	1,122	1,122	1,122	1,122	1,122	1,122
Irrigation	A	Dockum Aquifer | Potter County	274	292	303	311	315	318
Irrigation	A	Ogallala Aquifer | Potter County	375	357	345	338	334	330
Randall County WUG Total			**53,809**	**53,248**	**52,389**	**50,956**	**49,216**	**48,893**
Randall County / Red Basin WUG Total			**53,809**	**53,248**	**52,389**	**50,956**	**49,216**	**48,893**
Amarillo	A	Dockum Aquifer | Carson County	1	1	1	2	2	2
Amarillo	A	Dockum Aquifer | Potter County	252	268	284	301	314	321
Amarillo	A	Meredith Lake/Reservoir	3,899	3,930	4,724	4,968	5,167	5,285

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Amarillo	O	Ogallala and Edwards-Trinity-High Plains Aquifers | Deaf Smith County	39	21	22	0	0	0
Amarillo	A	Ogallala Aquifer | Carson County	6,601	6,961	7,199	7,477	7,804	8,000
Amarillo	A	Ogallala Aquifer | Potter County	1,069	1,042	977	901	854	807
Amarillo	A	Ogallala Aquifer | Randall County	299	236	207	190	114	118
Amarillo	A	Ogallala Aquifer | Roberts County	11,017	11,759	11,652	11,203	10,464	10,946
Canyon	A	Dockum Aquifer | Potter County	11	10	10	9	9	8
Canyon	A	Dockum Aquifer | Randall County	1,780	1,691	1,606	1,526	1,450	1,378
Canyon	A	Meredith Lake/Reservoir	163	146	159	153	147	140
Canyon	O	Ogallala and Edwards-Trinity-High Plains Aquifers | Deaf Smith County	2	1	1	0	0	0
Canyon	A	Ogallala Aquifer | Carson County	276	260	242	231	222	211
Canyon	A	Ogallala Aquifer | Potter County	45	39	33	28	24	21
Canyon	A	Ogallala Aquifer | Randall County	1,512	1,434	1,361	1,292	1,225	1,164
Canyon	A	Ogallala Aquifer | Roberts County	461	438	393	346	298	289
Happy*	O	Dockum Aquifer | Swisher County	10	11	12	13	14	16
Lake Tanglewood	A	Dockum Aquifer | Randall County	0	0	0	0	0	0
Lake Tanglewood	A	Ogallala Aquifer | Randall County	111	107	92	74	57	44
Siesta Estates	A	Dockum Aquifer | Dallam County	0	0	0	0	0	0
Siesta Estates	A	Dockum Aquifer | Randall County	119	134	149	162	176	190
County-Other	A	Dockum Aquifer | Randall County	2,018	2,270	2,515	2,751	2,987	3,222
County-Other	A	Meredith Lake/Reservoir	4	4	4	4	4	3

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
County-Other	O	Ogallala and Edwards-Trinity-High Plains Aquifers | Deaf Smith County	0	0	0	0	0	0
County-Other	A	Ogallala Aquifer | Carson County	6	6	6	6	6	6
County-Other	A	Ogallala Aquifer | Potter County	1	1	1	1	1	1
County-Other	A	Ogallala Aquifer | Randall County	3,000	3,375	3,739	4,090	4,440	4,790
County-Other	A	Ogallala Aquifer | Roberts County	12	11	10	9	7	7
Manufacturing	A	Dockum Aquifer | Potter County	13	13	13	13	13	12
Manufacturing	A	Meredith Lake/Reservoir	201	187	211	211	209	206
Manufacturing	O	Ogallala and Edwards-Trinity-High Plains Aquifers | Deaf Smith County	2	1	1	0	0	0
Manufacturing	A	Ogallala Aquifer | Carson County	340	331	322	316	317	312
Manufacturing	A	Ogallala Aquifer | Potter County	55	50	44	38	35	31
Manufacturing	A	Ogallala Aquifer | Randall County	20	16	14	13	10	10
Manufacturing	A	Ogallala Aquifer | Roberts County	567	559	520	475	424	427
Livestock	A	Dockum Aquifer | Randall County	543	543	543	543	543	543
Livestock	A	Local Surface Water Supply	908	908	908	908	908	908
Livestock	A	Ogallala Aquifer | Randall County	1,327	1,341	1,352	1,363	1,374	1,386
Irrigation	A	Dockum Aquifer | Randall County	1,026	1,043	817	743	691	664
Irrigation	A	Ogallala Aquifer | Randall County	15,975	13,976	12,121	10,472	8,782	7,301
Irrigation	A	Red Run-of-River	124	124	124	124	124	124

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Roberts County WUG Total			**10,931**	**10,920**	**10,911**	**10,905**	**10,900**	**10,891**
Roberts County / Canadian Basin WUG Total			**10,431**	**10,418**	**10,411**	**10,405**	**10,398**	**10,390**
Miami	A	Ogallala Aquifer | Roberts County	200	180	162	146	131	118
County-Other	A	Ogallala Aquifer | Roberts County	30	29	29	29	29	29
Mining	A	Ogallala Aquifer | Roberts County	684	684	684	684	684	684
Livestock	A	Local Surface Water Supply	64	63	64	64	63	64
Livestock	A	Ogallala Aquifer | Roberts County	368	377	387	397	406	410
Irrigation	A	Canadian Run-of-River	68	68	68	68	68	68
Irrigation	A	Ogallala Aquifer | Roberts County	9,017	9,017	9,017	9,017	9,017	9,017
Roberts County / Red Basin WUG Total			**500**	**502**	**500**	**500**	**502**	**501**
County-Other	A	Ogallala Aquifer | Roberts County	3	3	2	2	2	2
Livestock	A	Local Surface Water Supply	2	3	2	2	3	2
Livestock	A	Ogallala Aquifer | Roberts County	16	17	17	17	18	18
Irrigation	A	Canadian Run-of-River	4	4	4	4	4	4
Irrigation	A	Ogallala Aquifer | Roberts County	475	475	475	475	475	475
Sherman County WUG Total			**280,292**	**255,826**	**222,558**	**196,379**	**165,889**	**145,399**
Sherman County / Canadian Basin WUG Total			**280,292**	**255,826**	**222,558**	**196,379**	**165,889**	**145,399**
Stratford	A	Ogallala Aquifer | Sherman County	434	435	433	366	221	146
Texhoma	A	Ogallala Aquifer | Sherman County	85	83	80	77	74	71
County-Other	A	Ogallala Aquifer | Sherman County	116	113	109	105	101	96
Manufacturing	A	Ogallala Aquifer | Sherman County	2	2	2	2	2	2
Mining	A	Ogallala Aquifer | Sherman County	7	7	7	7	7	7
Livestock	A	Local Surface Water Supply	646	646	646	646	646	646

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DRAFT Region A Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Livestock	A	Ogallala Aquifer | Sherman County	3,970	4,091	4,159	4,228	4,300	4,373
Irrigation	A	Canadian Run-of-River	32	32	32	32	32	32
Irrigation	A	Dockum Aquifer | Sherman County	416	310	288	293	288	291
Irrigation	A	Ogallala Aquifer | Sherman County	274,584	250,107	216,802	190,623	160,218	139,735
Wheeler County WUG Total			**23,341**	**23,240**	**23,157**	**23,087**	**23,000**	**22,897**
Wheeler County / Red Basin WUG Total			**23,341**	**23,240**	**23,157**	**23,087**	**23,000**	**22,897**
Shamrock Municipal Water System	A	Ogallala Aquifer | Wheeler County	314	276	272	262	210	123
Wheeler	A	Ogallala Aquifer | Wheeler County	398	304	216	147	103	78
County-Other	A	Ogallala Aquifer | Wheeler County	233	223	213	204	194	184
County-Other	A	Other Aquifer | Wheeler County	22	22	22	22	22	22
Mining	A	Ogallala Aquifer | Wheeler County	4,156	4,156	4,157	4,157	4,158	4,158
Livestock	A	Local Surface Water Supply	437	437	437	437	437	437
Livestock	A	Ogallala Aquifer | Wheeler County	840	881	899	917	935	954
Livestock	A	Other Aquifer | Wheeler County	28	28	28	28	28	28
Irrigation	A	Blaine Aquifer | Wheeler County	0	0	0	0	0	0
Irrigation	A	Ogallala Aquifer | Wheeler County	16,458	16,458	16,458	16,458	16,458	16,458
Irrigation	A	Other Aquifer | Wheeler County	0	0	0	0	0	0
Irrigation	A	Red Run-of-River	455	455	455	455	455	455
Region A WUG Existing Water Supply Total			**1,724,938**	**1,602,315**	**1,490,030**	**1,390,946**	**1,303,449**	**1,239,122**

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DRAFT Region A Water User Group (WUG) Needs or Surplus

WUG supplies and projected demands are entered for each of a WUG's region-county-basin divisions. The needs shown in the WUG Needs/Surplus report are calculated by first deducting the WUG split's projected demand from its total existing water supply volume. If the WUG split has a greater existing supply volume than projected demand in any given decade, this amount is considered a surplus volume. Surplus volumes are shown as positive values, and needs are shown as negative values in parentheses.

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Claude Municipal Water System	Armstrong	Red	0	0	0	0	0	0
County-Other	Armstrong	Red	0	0	0	0	0	0
Livestock	Armstrong	Red	211	211	211	211	211	211
Irrigation	Armstrong	Red	1,397	491	(196)	(726)	(1,334)	(1,855)
Fritch	Carson	Canadian	0	1	1	(3)	(7)	(13)
White Deer	Carson	Canadian	6	5	6	8	13	18
County-Other	Carson	Canadian	0	0	0	0	0	0
Manufacturing	Carson	Canadian	0	0	0	0	0	0
Livestock	Carson	Canadian	53	53	53	53	53	53
Irrigation	Carson	Canadian	998	2,416	1,361	6	0	1
Groom Municipal Water System	Carson	Red	23	9	7	7	5	2
Panhandle Municipal Water System	Carson	Red	0	0	0	0	0	0
White Deer	Carson	Red	9	7	9	13	18	27
County-Other	Carson	Red	0	0	0	0	0	0
Manufacturing	Carson	Red	0	0	0	0	0	0
Mining	Carson	Red	0	0	0	0	0	0
Livestock	Carson	Red	43	43	43	43	43	43
Irrigation	Carson	Red	2,851	6,909	3,892	14	0	(1)
Childress	Childress	Red	0	0	0	0	0	0
Red River Authority of Texas*	Childress	Red	0	0	0	0	0	0
County-Other	Childress	Red	0	0	0	0	0	0
Livestock	Childress	Red	0	(7)	(15)	(23)	(31)	(40)
Irrigation	Childress	Red	0	0	0	0	0	0
Red River Authority of Texas*	Collingsworth	Red	0	0	0	0	0	0
Wellington Municipal Water System	Collingsworth	Red	0	0	0	0	0	0
County-Other	Collingsworth	Red	0	0	0	0	0	0
Livestock	Collingsworth	Red	0	0	0	0	0	0

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DRAFT Region A Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Irrigation	Collingsworth	Red	(16,131)	(19,039)	(18,908)	(18,515)	(18,538)	(19,069)
Dalhart	Dallam	Canadian	0	0	0	0	0	0
Texline	Dallam	Canadian	0	0	0	0	0	0
County-Other	Dallam	Canadian	0	0	0	0	0	0
Manufacturing	Dallam	Canadian	0	0	0	0	0	0
Livestock	Dallam	Canadian	0	0	0	0	0	0
Irrigation	Dallam	Canadian	(121,228)	(156,912)	(148,470)	(140,598)	(133,194)	(127,842)
Clarendon	Donley	Red	0	0	0	0	0	0
Red River Authority of Texas*	Donley	Red	0	0	0	0	0	0
County-Other	Donley	Red	0	0	0	0	0	0
Livestock	Donley	Red	119	108	96	84	71	58
Irrigation	Donley	Red	0	0	0	0	0	0
Pampa Municipal Water System	Gray	Canadian	579	161	(248)	(441)	(620)	(631)
County-Other	Gray	Canadian	0	0	0	0	0	0
Manufacturing	Gray	Canadian	172	173	172	172	172	172
Livestock	Gray	Canadian	26	21	21	20	19	18
Irrigation	Gray	Canadian	0	0	0	0	0	0
McLean Municipal Water Supply	Gray	Red	0	0	0	0	0	0
County-Other	Gray	Red	0	0	0	0	0	0
Manufacturing	Gray	Red	2	1	2	2	2	2
Livestock	Gray	Red	71	61	58	56	55	52
Irrigation	Gray	Red	0	0	0	0	0	0
Memphis	Hall	Red	0	0	0	0	0	0
Red River Authority of Texas*	Hall	Red	59	62	65	71	75	94
Turkey Municipal Water System	Hall	Red	0	0	0	0	0	0
County-Other	Hall	Red	0	0	0	0	0	0
Manufacturing	Hall	Red	0	0	0	0	0	0
Livestock	Hall	Red	0	0	0	0	0	0
Irrigation	Hall	Red	(15,780)	(12,917)	(13,098)	(13,271)	(13,197)	(12,944)
Gruver	Hansford	Canadian	(80)	(87)	(90)	(96)	(101)	(107)
Spearman Municipal Water System	Hansford	Canadian	142	125	120	105	91	76
County-Other	Hansford	Canadian	0	0	0	0	0	0

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DRAFT Region A Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	County	Basin	2030	2040	2050	2060	2070	2080
Manufacturing	Hansford	Canadian	0	0	0	0	0	0
Mining	Hansford	Canadian	0	0	0	0	0	0
Livestock	Hansford	Canadian	0	0	0	0	0	0
Irrigation	Hansford	Canadian	0	0	0	0	0	0
Dalhart	Hartley	Canadian	0	0	0	1	0	0
Hartley WSC	Hartley	Canadian	0	0	0	0	0	0
County-Other	Hartley	Canadian	0	0	0	0	0	0
Mining	Hartley	Canadian	0	0	0	0	0	0
Livestock	Hartley	Canadian	(983)	(1,873)	(1,981)	(2,091)	(2,204)	(2,319)
Irrigation	Hartley	Canadian	(172,558)	(229,447)	(216,085)	(204,225)	(193,294)	(183,960)
Canadian	Hemphill	Canadian	74	78	100	114	127	141
County-Other	Hemphill	Canadian	0	0	0	0	0	0
Mining	Hemphill	Canadian	0	0	0	0	0	0
Livestock	Hemphill	Canadian	0	0	0	0	0	1
Irrigation	Hemphill	Canadian	0	0	0	0	0	0
County-Other	Hemphill	Red	0	0	0	0	0	0
Manufacturing	Hemphill	Red	1	1	1	1	1	1
Mining	Hemphill	Red	0	0	0	0	0	0
Livestock	Hemphill	Red	0	0	0	0	0	(1)
Irrigation	Hemphill	Red	0	0	0	0	0	0
Borger	Hutchinson	Canadian	34	(122)	(278)	(410)	(530)	(570)
Fritch	Hutchinson	Canadian	0	6	7	(18)	(45)	(73)
Stinnett	Hutchinson	Canadian	23	62	94	122	(27)	(50)
TCW Supply	Hutchinson	Canadian	0	31	53	68	74	74
County-Other	Hutchinson	Canadian	0	0	0	0	0	0
Manufacturing	Hutchinson	Canadian	0	0	0	0	0	(1,805)
Mining	Hutchinson	Canadian	0	0	0	0	0	0
Livestock	Hutchinson	Canadian	125	116	106	96	86	75
Irrigation	Hutchinson	Canadian	0	0	0	0	0	(1,980)
Booker	Lipscomb	Canadian	(73)	(81)	(91)	(102)	(106)	(112)
Darrouzett	Lipscomb	Canadian	0	0	0	0	0	0
Follett	Lipscomb	Canadian	0	0	0	0	0	0
Higgins Municipal Water System	Lipscomb	Canadian	0	0	0	0	0	0
County-Other	Lipscomb	Canadian	0	0	0	0	0	0
Manufacturing	Lipscomb	Canadian	(88)	(111)	(140)	(174)	(207)	(247)
Mining	Lipscomb	Canadian	0	0	0	0	0	0
Livestock	Lipscomb	Canadian	168	168	168	168	168	168

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DRAFT Region A Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Irrigation	Lipscomb	Canadian	0	0	0	0	0	0
Cactus Municipal Water System	Moore	Canadian	15	(97)	(192)	(267)	(329)	(380)
Dumas	Moore	Canadian	328	(1,004)	(1,513)	(1,679)	(1,748)	(1,869)
Fritch	Moore	Canadian	0	0	0	(1)	(3)	(4)
Sunray	Moore	Canadian	120	121	120	131	44	41
County-Other	Moore	Canadian	0	0	0	0	0	0
Manufacturing	Moore	Canadian	(792)	(1,494)	(2,182)	(2,853)	(3,522)	(4,190)
Mining	Moore	Canadian	0	0	0	0	0	0
Livestock	Moore	Canadian	(8,302)	(9,557)	(9,616)	(9,677)	(9,739)	(9,803)
Irrigation	Moore	Canadian	(66,665)	(72,883)	(68,994)	(64,716)	(59,954)	(55,444)
Booker	Ochiltree	Canadian	(2)	(2)	(2)	(2)	(2)	(2)
Perryton Municipal Water System	Ochiltree	Canadian	285	233	136	(48)	(320)	(575)
County-Other	Ochiltree	Canadian	0	0	0	0	0	0
Manufacturing	Ochiltree	Canadian	0	0	0	0	0	0
Mining	Ochiltree	Canadian	0	0	0	0	0	0
Livestock	Ochiltree	Canadian	443	443	443	443	443	443
Irrigation	Ochiltree	Canadian	0	0	0	0	0	0
Vega	Oldham	Canadian	0	0	0	0	0	0
County-Other	Oldham	Canadian	0	0	1	0	1	1
Mining	Oldham	Canadian	0	0	0	0	0	0
Livestock	Oldham	Canadian	359	351	344	335	327	317
Irrigation	Oldham	Canadian	(77)	(77)	(77)	(77)	(77)	(143)
County-Other	Oldham	Red	0	0	0	0	(1)	(1)
Mining	Oldham	Red	0	0	0	0	0	0
Livestock	Oldham	Red	153	150	145	142	138	135
Irrigation	Oldham	Red	(242)	(242)	(242)	(242)	(242)	(449)
Amarillo	Potter	Canadian	(434)	(1,336)	(2,062)	(2,885)	(3,585)	(3,752)
County-Other	Potter	Canadian	(1)	0	0	0	0	(1)
Manufacturing	Potter	Canadian	1	(41)	(80)	(131)	(184)	(216)
Mining	Potter	Canadian	0	0	0	0	0	0
Steam Electric Power	Potter	Canadian	0	0	0	0	0	0
Livestock	Potter	Canadian	62	55	47	40	32	25
Irrigation	Potter	Canadian	(1)	(1)	0	(1)	(1)	0
Amarillo	Potter	Red	(284)	(878)	(1,353)	(1,895)	(2,353)	(2,463)
County-Other	Potter	Red	1	0	0	0	0	1

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DRAFT Region A Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Manufacturing	Potter	Red	28	(639)	(1,265)	(2,101)	(2,979)	(3,477)
Mining	Potter	Red	0	0	0	0	0	0
Livestock	Potter	Red	29	26	23	19	16	12
Irrigation	Potter	Red	1	1	0	1	1	0
Amarillo	Randall	Red	(746)	(2,625)	(4,600)	(7,352)	(10,411)	(12,392)
Canyon	Randall	Red	262	(415)	(1,057)	(1,687)	(2,309)	(2,885)
Happy*	Randall	Red	4	5	7	9	10	13
Lake Tanglewood	Randall	Red	(143)	(98)	(74)	(59)	(50)	(41)
Siesta Estates	Randall	Red	0	0	0	0	0	0
County-Other	Randall	Red	23	22	21	20	18	17
Manufacturing	Randall	Red	(38)	(125)	(204)	(312)	(421)	(484)
Livestock	Randall	Red	0	0	0	0	0	0
Irrigation	Randall	Red	(317)	(2,299)	(4,380)	(6,103)	(7,845)	(9,353)
Miami	Roberts	Canadian	20	8	(6)	(19)	(33)	(44)
County-Other	Roberts	Canadian	0	0	0	0	0	0
Mining	Roberts	Canadian	0	0	0	0	0	0
Livestock	Roberts	Canadian	64	63	64	64	63	57
Irrigation	Roberts	Canadian	(1)	(1)	(1)	(1)	(1)	(1)
County-Other	Roberts	Red	0	0	0	0	0	0
Livestock	Roberts	Red	2	3	2	2	3	2
Irrigation	Roberts	Red	1	1	1	1	1	1
Stratford	Sherman	Canadian	(133)	(120)	(104)	(149)	(272)	(326)
Texhoma	Sherman	Canadian	0	0	0	0	0	0
County-Other	Sherman	Canadian	0	0	0	0	0	0
Manufacturing	Sherman	Canadian	0	0	0	0	0	0
Mining	Sherman	Canadian	0	0	0	0	0	0
Livestock	Sherman	Canadian	646	646	646	646	646	646
Irrigation	Sherman	Canadian	(34,490)	(59,073)	(53,887)	(49,819)	(45,778)	(43,115)
Shamrock Municipal Water System	Wheeler	Red	32	2	6	2	(45)	(127)
Wheeler	Wheeler	Red	(37)	(118)	(191)	(248)	(279)	(292)
County-Other	Wheeler	Red	0	0	0	0	0	0
Mining	Wheeler	Red	0	0	0	0	0	0
Livestock	Wheeler	Red	0	0	0	0	0	0
Irrigation	Wheeler	Red	0	0	0	0	0	0

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DRAFT Region A 2026 Regional Water Plan (RWP)
Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Armstrong County| Municipal WUG Type						
Existing WUG supply total	637	410	-35.6%	454	393	-13.4%
Projected demand total	438	410	-6.4%	429	393	-8.4%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Armstrong County| Livestock WUG Type						
Existing WUG supply total	449	556	23.8%	524	588	12.2%
Projected demand total	449	345	-23.2%	524	377	-28.1%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Armstrong County| Irrigation WUG Type						
Existing WUG supply total	6,322	7,721	22.1%	6,380	4,990	-21.8%
Projected demand total	6,244	6,324	1.3%	6,244	6,324	1.3%
Water supply needs total**	0	0	0.0%	0	1,334	100.0%
Carson County| Municipal WUG Type						
Existing WUG supply total	1,050	1,221	16.3%	833	1,024	22.9%
Projected demand total	1,291	1,183	-8.4%	1,278	995	-22.1%
Water supply needs total**	461	0	-100.0%	580	7	-98.8%
Carson County| Manufacturing WUG Type						
Existing WUG supply total	1,136	1,497	31.8%	1,136	1,731	52.4%
Projected demand total	1,136	1,497	31.8%	1,136	1,731	52.4%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Carson County| Mining WUG Type						
Existing WUG supply total	14	3	-78.6%	14	3	-78.6%
Projected demand total	14	3	-78.6%	14	3	-78.6%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Carson County| Livestock WUG Type						
Existing WUG supply total	430	433	0.7%	496	460	-7.3%

*The 2030 and 2070 planning decades are used in this comparison because they represent the earliest and latest planning decades in both the 2021 and 2026 RWPs

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DRAFT Region A 2026 Regional Water Plan (RWP)
Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Projected demand total	430	337	-21.6%	496	364	-26.6%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Carson County| Irrigation WUG Type						
Existing WUG supply total	87,625	101,782	16.2%	87,624	97,933	11.8%
Projected demand total	87,289	97,933	12.2%	87,289	97,933	12.2%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Childress County| Municipal WUG Type						
Existing WUG supply total	1,899	1,677	-11.7%	1,685	1,614	-4.2%
Projected demand total	1,898	1,677	-11.6%	2,078	1,614	-22.3%
Water supply needs total**	0	0	0.0%	393	0	-100.0%
Childress County| Livestock WUG Type						
Existing WUG supply total	487	328	-32.6%	538	328	-39.0%
Projected demand total	460	328	-28.7%	538	359	-33.3%
Water supply needs total**	0	0	0.0%	0	31	100.0%
Childress County| Irrigation WUG Type						
Existing WUG supply total	14,344	14,971	4.4%	14,359	14,971	4.3%
Projected demand total	14,142	14,971	5.9%	14,142	14,971	5.9%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Collingsworth County| Municipal WUG Type						
Existing WUG supply total	234	552	135.9%	253	458	81.0%
Projected demand total	761	552	-27.5%	844	458	-45.7%
Water supply needs total**	540	0	-100.0%	595	0	-100.0%
Collingsworth County| Livestock WUG Type						
Existing WUG supply total	583	462	-20.8%	688	508	-26.2%
Projected demand total	583	462	-20.8%	688	508	-26.2%
Water supply needs total**	0	0	0.0%	0	0	0.0%

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DRAFT Region A 2026 Regional Water Plan (RWP)
Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Collingsworth County| Irrigation WUG Type						
Existing WUG supply total	32,409	33,463	3.3%	24,382	24,787	1.7%
Projected demand total	42,542	49,594	16.6%	33,451	43,325	29.5%
Water supply needs total**	10,133	16,131	59.2%	9,069	18,538	104.4%
Dallam County| Municipal WUG Type						
Existing WUG supply total	1,558	2,002	28.5%	979	2,413	146.5%
Projected demand total	2,399	2,002	-16.5%	3,392	2,413	-28.9%
Water supply needs total**	880	0	-100.0%	2,413	0	-100.0%
Dallam County| Manufacturing WUG Type						
Existing WUG supply total	6	1,333	22116.7%	6	1,541	25583.3%
Projected demand total	6	1,333	22116.7%	6	1,541	25583.3%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Dallam County| Livestock WUG Type						
Existing WUG supply total	4,860	5,222	7.4%	6,006	5,684	-5.4%
Projected demand total	4,860	5,222	7.4%	6,006	5,684	-5.4%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Dallam County| Irrigation WUG Type						
Existing WUG supply total	227,472	219,401	-3.5%	99,966	112,833	12.9%
Projected demand total	343,830	340,629	-0.9%	174,217	246,027	41.2%
Water supply needs total**	116,358	121,228	4.2%	74,251	133,194	79.4%
Donley County| Municipal WUG Type						
Existing WUG supply total	767	524	-31.7%	706	415	-41.2%
Projected demand total	711	524	-26.3%	727	415	-42.9%
Water supply needs total**	0	0	0.0%	66	0	-100.0%
Donley County| Livestock WUG Type						
Existing WUG supply total	994	1,183	19.0%	1,102	1,183	7.4%

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DRAFT Region A 2026 Regional Water Plan (RWP)
Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Projected demand total	994	1,064	7.0%	1,102	1,112	0.9%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Donley County| Irrigation WUG Type						
Existing WUG supply total	31,076	32,440	4.4%	31,076	32,440	4.4%
Projected demand total	30,910	32,440	4.9%	30,910	32,440	4.9%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Gray County| Municipal WUG Type						
Existing WUG supply total	4,868	4,512	-7.3%	4,927	2,862	-41.9%
Projected demand total	4,962	3,933	-20.7%	7,283	3,482	-52.2%
Water supply needs total**	160	0	-100.0%	2,356	620	-73.7%
Gray County| Manufacturing WUG Type						
Existing WUG supply total	527	521	-1.1%	527	575	9.1%
Projected demand total	502	347	-30.9%	502	401	-20.1%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Gray County| Mining WUG Type						
Existing WUG supply total	74	0	-100.0%	47	0	-100.0%
Projected demand total	74	0	-100.0%	47	0	-100.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Gray County| Livestock WUG Type						
Existing WUG supply total	2,194	1,856	-15.4%	2,597	1,916	-26.2%
Projected demand total	2,148	1,759	-18.1%	2,596	1,842	-29.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Gray County| Irrigation WUG Type						
Existing WUG supply total	32,565	36,952	13.5%	29,657	36,952	24.6%
Projected demand total	32,289	36,952	14.4%	32,289	36,952	14.4%
Water supply needs total**	0	0	0.0%	2,687	0	-100.0%

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DRAFT Region A 2026 Regional Water Plan (RWP)
Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Hall County| Municipal WUG Type						
Existing WUG supply total	664	586	-11.7%	513	464	-9.6%
Projected demand total	680	527	-22.5%	659	389	-41.0%
Water supply needs total**	28	0	-100.0%	146	0	-100.0%
Hall County| Manufacturing WUG Type						
Existing WUG supply total	0	1	100.0%	0	1	100.0%
Projected demand total	0	1	100.0%	0	1	100.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Hall County| Livestock WUG Type						
Existing WUG supply total	406	341	-16.0%	435	376	-13.6%
Projected demand total	357	341	-4.5%	435	376	-13.6%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Hall County| Irrigation WUG Type						
Existing WUG supply total	17,467	17,545	0.4%	25,312	25,407	0.4%
Projected demand total	31,792	33,325	4.8%	31,792	38,604	21.4%
Water supply needs total**	14,325	15,780	10.2%	6,480	13,197	103.7%
Hansford County| Municipal WUG Type						
Existing WUG supply total	1,347	1,430	6.2%	599	1,437	139.9%
Projected demand total	1,184	1,368	15.5%	1,384	1,447	4.6%
Water supply needs total**	20	80	300.0%	797	101	-87.3%
Hansford County| Manufacturing WUG Type						
Existing WUG supply total	321	359	11.8%	321	415	29.3%
Projected demand total	321	359	11.8%	321	415	29.3%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Hansford County| Mining WUG Type						
Existing WUG supply total	904	93	-89.7%	1	93	9200.0%

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DRAFT Region A 2026 Regional Water Plan (RWP)
Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Projected demand total	904	93	-89.7%	1	93	9200.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Hansford County| Livestock WUG Type						
Existing WUG supply total	4,204	4,705	11.9%	4,995	5,120	2.5%
Projected demand total	4,204	4,705	11.9%	4,995	5,120	2.5%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Hansford County| Irrigation WUG Type						
Existing WUG supply total	171,922	175,686	2.2%	171,922	175,686	2.2%
Projected demand total	171,900	175,686	2.2%	171,900	175,686	2.2%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Hartley County| Municipal WUG Type						
Existing WUG supply total	1,309	1,442	10.2%	1,043	1,444	38.4%
Projected demand total	1,669	1,442	-13.6%	1,765	1,444	-18.2%
Water supply needs total**	381	0	-100.0%	752	0	-100.0%
Hartley County| Mining WUG Type						
Existing WUG supply total	7	85	1114.3%	3	85	2733.3%
Projected demand total	7	85	1114.3%	3	85	2733.3%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Hartley County| Livestock WUG Type						
Existing WUG supply total	7,375	10,801	46.5%	9,866	10,801	9.5%
Projected demand total	7,375	11,784	59.8%	9,866	13,005	31.8%
Water supply needs total**	0	983	100.0%	0	2,204	100.0%
Hartley County| Irrigation WUG Type						
Existing WUG supply total	214,225	226,556	5.8%	85,270	98,530	15.6%
Projected demand total	406,990	399,114	-1.9%	226,681	291,824	28.7%
Water supply needs total**	192,765	172,558	-10.5%	141,411	193,294	36.7%

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DRAFT Region A 2026 Regional Water Plan (RWP)
Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Hemphill County| Municipal WUG Type						
Existing WUG supply total	1,223	793	-35.2%	1,576	785	-50.2%
Projected demand total	1,042	719	-31.0%	1,336	658	-50.7%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Hemphill County| Manufacturing WUG Type						
Existing WUG supply total	6	2	-66.7%	6	2	-66.7%
Projected demand total	6	1	-83.3%	6	1	-83.3%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Hemphill County| Mining WUG Type						
Existing WUG supply total	1,763	1,555	-11.8%	68	1,555	2186.8%
Projected demand total	1,763	1,555	-11.8%	68	1,555	2186.8%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Hemphill County| Livestock WUG Type						
Existing WUG supply total	1,146	1,093	-4.6%	1,280	1,154	-9.8%
Projected demand total	1,146	1,093	-4.6%	1,280	1,154	-9.8%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Hemphill County| Irrigation WUG Type						
Existing WUG supply total	5,679	5,877	3.5%	5,679	5,877	3.5%
Projected demand total	5,679	5,877	3.5%	5,679	5,877	3.5%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Hutchinson County| Municipal WUG Type						
Existing WUG supply total	7,257	5,971	-17.7%	4,775	4,358	-8.7%
Projected demand total	5,233	5,914	13.0%	5,183	4,886	-5.7%
Water supply needs total**	132	0	-100.0%	450	602	33.8%
Hutchinson County| Manufacturing WUG Type						
Existing WUG supply total	31,303	18,231	-41.8%	31,163	21,083	-32.3%

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DRAFT Region A 2026 Regional Water Plan (RWP)
Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Projected demand total	31,335	18,231	-41.8%	31,335	21,083	-32.7%
Water supply needs total**	32	0	-100.0%	172	0	-100.0%
Hutchinson County| Mining WUG Type						
Existing WUG supply total	231	67	-71.0%	34	67	97.1%
Projected demand total	231	67	-71.0%	34	67	97.1%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Hutchinson County| Livestock WUG Type						
Existing WUG supply total	636	647	1.7%	771	647	-16.1%
Projected demand total	636	522	-17.9%	771	561	-27.2%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Hutchinson County| Irrigation WUG Type						
Existing WUG supply total	60,006	61,866	3.1%	60,006	61,866	3.1%
Projected demand total	59,910	61,866	3.3%	59,910	61,866	3.3%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Lipscomb County| Municipal WUG Type						
Existing WUG supply total	1,151	713	-38.1%	1,039	508	-51.1%
Projected demand total	1,073	786	-26.7%	1,230	614	-50.1%
Water supply needs total**	0	73	100.0%	233	106	-54.5%
Lipscomb County| Manufacturing WUG Type						
Existing WUG supply total	400	620	55.0%	261	611	134.1%
Projected demand total	400	708	77.0%	400	818	104.5%
Water supply needs total**	0	88	100.0%	139	207	48.9%
Lipscomb County| Mining WUG Type						
Existing WUG supply total	758	1,018	34.3%	3	1,018	33833.3%
Projected demand total	758	1,018	34.3%	3	1,018	33833.3%
Water supply needs total**	0	0	0.0%	0	0	0.0%

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Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Lipscomb County| Livestock WUG Type						
Existing WUG supply total	631	1,027	62.8%	750	1,084	44.5%
Projected demand total	631	859	36.1%	750	916	22.1%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Lipscomb County| Irrigation WUG Type						
Existing WUG supply total	40,936	43,349	5.9%	40,936	43,349	5.9%
Projected demand total	40,870	43,349	6.1%	40,870	43,349	6.1%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Moore County| Municipal WUG Type						
Existing WUG supply total	4,247	4,983	17.3%	1,742	2,254	29.4%
Projected demand total	5,880	4,520	-23.1%	8,678	4,290	-50.6%
Water supply needs total**	1,635	0	-100.0%	6,937	2,080	-70.0%
Moore County| Manufacturing WUG Type						
Existing WUG supply total	7,856	10,347	31.7%	3,844	9,359	143.5%
Projected demand total	9,629	11,139	15.7%	9,629	12,881	33.8%
Water supply needs total**	1,773	792	-55.3%	5,785	3,522	-39.1%
Moore County| Mining WUG Type						
Existing WUG supply total	16	33	106.3%	15	33	120.0%
Projected demand total	16	33	106.3%	15	33	120.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Moore County| Livestock WUG Type						
Existing WUG supply total	6,192	5,542	-10.5%	8,515	5,542	-34.9%
Projected demand total	6,192	13,844	123.6%	8,515	15,281	79.5%
Water supply needs total**	0	8,302	100.0%	0	9,739	100.0%
Moore County| Irrigation WUG Type						
Existing WUG supply total	152,574	124,657	-18.3%	64,638	76,865	18.9%

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DRAFT Region A 2026 Regional Water Plan (RWP)
Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Projected demand total	200,550	191,322	-4.6%	102,919	136,819	32.9%
Water supply needs total**	47,976	66,665	39.0%	38,281	59,954	56.6%
Ochiltree County| Municipal WUG Type						
Existing WUG supply total	3,672	3,020	-17.8%	3,392	2,805	-17.3%
Projected demand total	3,182	2,737	-14.0%	4,174	3,127	-25.1%
Water supply needs total**	0	2	100.0%	824	322	-60.9%
Ochiltree County| Manufacturing WUG Type						
Existing WUG supply total	41	34	-17.1%	41	38	-7.3%
Projected demand total	41	34	-17.1%	41	38	-7.3%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Ochiltree County| Mining WUG Type						
Existing WUG supply total	853	797	-6.6%	3	797	26466.7%
Projected demand total	853	797	-6.6%	3	797	26466.7%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Ochiltree County| Livestock WUG Type						
Existing WUG supply total	2,962	3,278	10.7%	3,647	3,418	-6.3%
Projected demand total	2,962	2,835	-4.3%	3,647	2,975	-18.4%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Ochiltree County| Irrigation WUG Type						
Existing WUG supply total	84,460	86,683	2.6%	84,460	86,683	2.6%
Projected demand total	84,460	86,683	2.6%	84,460	86,683	2.6%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Oldham County| Municipal WUG Type						
Existing WUG supply total	969	487	-49.7%	969	271	-72.0%
Projected demand total	676	487	-28.0%	665	271	-59.2%
Water supply needs total**	0	0	0.0%	0	1	100.0%

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Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Oldham County| Mining WUG Type						
Existing WUG supply total	563	416	-26.1%	808	416	-48.5%
Projected demand total	563	416	-26.1%	808	416	-48.5%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Oldham County| Livestock WUG Type						
Existing WUG supply total	1,655	1,835	10.9%	1,655	1,844	11.4%
Projected demand total	1,239	1,323	6.8%	1,366	1,379	1.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Oldham County| Irrigation WUG Type						
Existing WUG supply total	4,721	4,721	0.0%	4,721	4,721	0.0%
Projected demand total	4,721	5,040	6.8%	4,721	5,040	6.8%
Water supply needs total**	0	319	100.0%	0	319	100.0%
Potter County| Municipal WUG Type						
Existing WUG supply total	30,031	24,781	-17.5%	25,466	16,673	-34.5%
Projected demand total	32,251	25,499	-20.9%	45,620	22,611	-50.4%
Water supply needs total**	3,120	719	-77.0%	21,054	5,938	-71.8%
Potter County| Manufacturing WUG Type						
Existing WUG supply total	8,111	11,638	43.5%	5,531	10,262	85.5%
Projected demand total	8,740	11,609	32.8%	8,740	13,425	53.6%
Water supply needs total**	629	0	-100.0%	3,209	3,163	-1.4%
Potter County| Mining WUG Type						
Existing WUG supply total	1,149	763	-33.6%	1,831	969	-47.1%
Projected demand total	1,149	763	-33.6%	1,831	969	-47.1%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Potter County| Steam Electric Power WUG Type						
Existing WUG supply total	18,554	15,000	-19.2%	18,554	15,000	-19.2%

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Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Projected demand total	18,554	15,000	-19.2%	18,554	15,000	-19.2%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Potter County| Livestock WUG Type						
Existing WUG supply total	608	597	-1.8%	625	597	-4.5%
Projected demand total	530	506	-4.5%	625	549	-12.2%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Potter County| Irrigation WUG Type						
Existing WUG supply total	4,037	3,472	-14.0%	4,037	3,472	-14.0%
Projected demand total	3,176	3,472	9.3%	3,176	3,472	9.3%
Water supply needs total**	0	1	100.0%	0	1	100.0%
Randall County| Municipal WUG Type						
Existing WUG supply total	30,341	32,708	7.8%	25,663	35,786	39.4%
Projected demand total	32,080	33,308	3.8%	45,244	48,528	7.3%
Water supply needs total**	2,604	889	-65.9%	20,387	12,770	-37.4%
Randall County| Manufacturing WUG Type						
Existing WUG supply total	565	1,198	112.0%	337	1,008	199.1%
Projected demand total	716	1,236	72.6%	716	1,429	99.6%
Water supply needs total**	151	38	-74.8%	379	421	11.1%
Randall County| Livestock WUG Type						
Existing WUG supply total	2,705	2,778	2.7%	2,862	2,825	-1.3%
Projected demand total	2,705	2,778	2.7%	2,862	2,825	-1.3%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Randall County| Irrigation WUG Type						
Existing WUG supply total	18,749	17,125	-8.7%	19,208	9,597	-50.0%
Projected demand total	17,720	17,442	-1.6%	17,720	17,442	-1.6%
Water supply needs total**	0	317	100.0%	0	7,845	100.0%

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	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Roberts County| Municipal WUG Type						
Existing WUG supply total	349	233	-33.2%	349	162	-53.6%
Projected demand total	276	213	-22.8%	271	195	-28.0%
Water supply needs total**	0	0	0.0%	0	33	100.0%
Roberts County| Mining WUG Type						
Existing WUG supply total	1,041	684	-34.3%	2	684	34100.0%
Projected demand total	1,041	684	-34.3%	2	684	34100.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Roberts County| Livestock WUG Type						
Existing WUG supply total	407	450	10.6%	493	490	-0.6%
Projected demand total	402	384	-4.5%	490	424	-13.5%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Roberts County| Irrigation WUG Type						
Existing WUG supply total	8,543	9,564	12.0%	8,543	9,564	12.0%
Projected demand total	8,543	9,564	12.0%	8,543	9,564	12.0%
Water supply needs total**	0	1	100.0%	0	1	100.0%
Sherman County| Municipal WUG Type						
Existing WUG supply total	1,071	635	-40.7%	914	396	-56.7%
Projected demand total	767	768	0.1%	843	668	-20.8%
Water supply needs total**	0	133	100.0%	0	272	100.0%
Sherman County| Manufacturing WUG Type						
Existing WUG supply total	2	2	0.0%	2	2	0.0%
Projected demand total	2	2	0.0%	2	2	0.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Sherman County| Mining WUG Type						
Existing WUG supply total	207	7	-96.6%	20	7	-65.0%

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	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Projected demand total	207	7	-96.6%	20	7	-65.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Sherman County| Livestock WUG Type						
Existing WUG supply total	3,813	4,616	21.1%	4,669	4,946	5.9%
Projected demand total	3,813	3,970	4.1%	4,669	4,300	-7.9%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Sherman County| Irrigation WUG Type						
Existing WUG supply total	304,519	275,032	-9.7%	144,113	160,538	11.4%
Projected demand total	304,360	309,522	1.7%	182,536	206,316	13.0%
Water supply needs total**	0	34,490	100.0%	38,423	45,778	19.1%
Wheeler County| Municipal WUG Type						
Existing WUG supply total	1,882	967	-48.6%	1,648	529	-67.9%
Projected demand total	1,155	972	-15.8%	1,303	853	-34.5%
Water supply needs total**	0	37	100.0%	153	324	111.8%
Wheeler County| Mining WUG Type						
Existing WUG supply total	2,329	4,156	78.4%	119	4,158	3394.1%
Projected demand total	2,329	4,156	78.4%	119	4,158	3394.1%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Wheeler County| Livestock WUG Type						
Existing WUG supply total	1,695	1,305	-23.0%	1,695	1,400	-17.4%
Projected demand total	1,321	1,305	-1.2%	1,479	1,400	-5.3%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Wheeler County| Irrigation WUG Type						
Existing WUG supply total	16,516	16,913	2.4%	16,522	16,913	2.4%
Projected demand total	16,224	16,913	4.2%	16,224	16,913	4.2%
Water supply needs total**	0	0	0.0%	0	0	0.0%

*The 2030 and 2070 planning decades are used in this comparison because they represent the earliest and latest planning decades in both the 2021 and 2026 RWPs

**WUG supplies and projected demands are entered for each of a WUG's region-county-basin divisions. The needs shown in the WUG Data Comparison to 2021 RWP report are calculated by first deducting the WUG split's projected demand from its total existing water supply volume. If the WUG split has a greater existing supply volume than projected demand in any given decade, this amount is considered a surplus volume. Before aggregating the difference between supplies and demands to the WUG county and category level, calculated surpluses are updated to zero so that only the WUGs with needs in the decade are included with the water supply needs totals.

DRAFT Region A 2026 Regional Water Plan (RWP)
Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

Region A Total						
Existing WUG supply total	1,755,862	1,724,938	-1.8%	1,227,242	1,303,449	6.2%
Projected demand total	2,138,483	2,154,499	0.7%	1,598,115	1,816,340	13.7%
Water supply needs total**	394,103	439,626	11.6%	378,422	515,918	36.3%

*The 2030 and 2070 planning decades are used in this comparison because they represent the earliest and latest planning decades in both the 2021 and 2026 RWPs

**WUG supplies and projected demands are entered for each of a WUG's region-county-basin divisions. The needs shown in the WUG Data Comparison to 2021 RWP report are calculated by first deducting the WUG split's projected demand from its total existing water supply volume. If the WUG split has a greater existing supply volume than projected demand in any given decade, this amount is considered a surplus volume. Before aggregating the difference between supplies and demands to the WUG county and category level, calculated surpluses are updated to zero so that only the WUGs with needs in the decade are included with the water supply needs totals.

DRAFT Region A 2026 Regional Water Plan (RWP)
Source Availability Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Armstrong County						
Groundwater availability total	63,856	64,746	1.4%	49,375	41,148	-16.7%
Surface Water availability total	122	79	-35.2%	122	79	-35.2%
Carson County						
Groundwater availability total	184,371	166,030	-9.9%	137,413	134,371	-2.2%
Reuse availability total	59	0	-100.0%	58	0	-100.0%
Surface Water availability total	411	165	-59.9%	411	165	-59.9%
Childress County						
Groundwater availability total	26,989	26,988	0.0%	27,040	27,039	0.0%
Reuse availability total	166	127	-23.5%	181	122	-32.6%
Surface Water availability total	68	44	-35.3%	68	44	-35.3%
Collingsworth County						
Groundwater availability total	33,905	33,855	-0.1%	25,182	25,132	-0.2%
Reuse availability total	54	0	-100.0%	60	0	-100.0%
Surface Water availability total	880	712	-19.1%	880	712	-19.1%
Dallam County						
Groundwater availability total	301,393	285,097	-5.4%	127,048	157,255	23.8%
Surface Water availability total	2,488	1,786	-28.2%	2,488	1,786	-28.2%
Donley County						
Groundwater availability total	76,768	78,746	2.6%	62,537	61,394	-1.8%
Surface Water availability total	449	417	-7.1%	449	417	-7.1%
Gray County						
Groundwater availability total	175,267	181,648	3.6%	134,431	133,802	-0.5%
Reuse availability total	220	220	0.0%	220	220	0.0%
Surface Water availability total	855	625	-26.9%	855	625	-26.9%
Hall County						
Groundwater availability total	23,677	23,677	0.0%	31,521	31,521	0.0%
Reuse availability total	100	100	0.0%	100	100	0.0%
Surface Water availability total	143	140	-2.1%	143	140	-2.1%
Hansford County						

*The 2030 and 2070 planning decades are used in this comparison because they represent the earliest and latest planning decades in both the 2021 and 2026 RWPs.

**Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

DRAFT Region A 2026 Regional Water Plan (RWP)
Source Availability Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Groundwater availability total	272,656	295,700	8.5%	269,589	229,800	-14.8%
Surface Water availability total	2,639	1,980	-25.0%	2,639	1,980	-25.0%
Hartley County						
Groundwater availability total	344,197	351,201	2.0%	163,260	188,220	15.3%
Surface Water availability total	3,193	3,480	9.0%	3,193	3,480	9.0%
Hemphill County						
Groundwater availability total	52,218	45,816	-12.3%	52,336	59,257	13.2%
Surface Water availability total	421	223	-47.0%	421	223	-47.0%
Hutchinson County						
Groundwater availability total	95,694	123,745	29.3%	90,858	96,847	6.6%
Reuse availability total	1,100	1,100	0.0%	1,100	1,100	0.0%
Surface Water availability total	379	262	-30.9%	379	262	-30.9%
Lipscomb County						
Groundwater availability total	266,710	270,819	1.5%	266,559	218,975	-17.9%
Surface Water availability total	176	234	33.0%	176	234	33.0%
Moore County						
Groundwater availability total	186,326	155,385	-16.6%	82,961	99,482	19.9%
Surface Water availability total	1,007	830	-17.6%	1,007	830	-17.6%
Ochiltree County						
Groundwater availability total	243,932	259,973	6.6%	244,082	199,324	-18.3%
Surface Water availability total	421	443	5.2%	421	443	5.2%
Oldham County						
Groundwater availability total	169,032	192,854	14.1%	121,003	135,962	12.4%
Surface Water availability total	835	737	-11.7%	835	737	-11.7%
Potter County						
Groundwater availability total	55,158	65,139	18.1%	44,065	48,998	11.2%
Reuse availability total	28,244	18,800	-33.4%	37,208	18,800	-49.5%
Surface Water availability total	562	154	-72.6%	562	154	-72.6%
Randall County						
Groundwater availability total	75,948	108,518	42.9%	57,099	62,950	10.2%
Reuse availability total	597	0	-100.0%	846	0	-100.0%

*The 2030 and 2070 planning decades are used in this comparison because they represent the earliest and latest planning decades in both the 2021 and 2026 RWPs.

**Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

DRAFT Region A 2026 Regional Water Plan (RWP)
Source Availability Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Surface Water availability total	1,529	1,032	-32.5%	1,529	1,032	-32.5%
Reservoir County**						
Surface Water availability total	31,451	27,740	-11.8%	30,465	26,983	-11.4%
Roberts County						
Groundwater availability total	455,129	409,300	-10.1%	350,459	317,529	-9.4%
Surface Water availability total	211	138	-34.6%	211	138	-34.6%
Sherman County						
Groundwater availability total	349,022	288,073	-17.5%	148,647	166,963	12.3%
Surface Water availability total	1,084	678	-37.5%	1,084	678	-37.5%
Wheeler County						
Groundwater availability total	140,836	132,891	-5.6%	126,804	114,545	-9.7%
Reuse availability total	51	0	-100.0%	57	0	-100.0%
Surface Water availability total	1,448	892	-38.4%	1,448	892	-38.4%
Region A Total						
Groundwater availability total	3,593,084	3,560,201	-0.9%	2,612,269	2,550,514	-2.4%
Reuse availability total	30,591	20,347	-33.5%	39,830	20,342	-48.9%
Surface Water availability total	50,772	42,791	-15.7%	49,786	42,034	-15.6%

*The 2030 and 2070 planning decades are used in this comparison because they represent the earliest and latest planning decades in both the 2021 and 2026 RWPs.

**Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

APPENDIX B
Hydrologic Variance Request and Approval for Surface Water

Region A
Panhandle Water
Planning Group

P.O. Box 9257, Amarillo, Texas 79105 | Phone: 806-372-3381 | Fax: 806-373-3268

July 18, 2023

Jeff Walker
Texas Water Development Board
1700 North Congress
Austin, Texas 78711-3231

RE: Hydrologic Variance Requests for Water Availability Determination of Current Surface Water Supplies in the Panhandle Region (Region A)

Dear Mr. Walker,

Surface water supplies in the Panhandle Water Planning Area (Region A) are obtained from the upper Red River Basin and the Canadian River Basin. The major surface water supplies in Region A are Lake Meredith and Palo Duro Reservoir in the Canadian River Basin and Greenbelt Reservoir in the Red River Basin.

In accordance with regional planning rules and guidelines, surface water supplies must be determined using the latest version of the TCEQ Water Availability Models (WAMs) with full authorization unless a hydrologic variance is granted by the TWDB. Regional planning rules also require the use and reporting of the firm yield for all surface water reservoirs. Changes to reservoir volumes due to sedimentation do not require a hydrologic variance request.

The TCEQ-approved WAMs for the Canadian and Red River Basins, with modifications, have been used for determining the available surface water supplies for the region for previously developed water plans. The period of record for the hydrology for the TCEQ-approved Canadian WAM is 1948 to 1998. Previous modifications by Region A have included the extension of hydrology for the Canadian WAM from 1998 to 2004 and extension of hydrology for Lake Meredith through 2017. The Red River WAM was recently updated with hydrology through 2018.

The updated Red River WAM and extended hydrology for Lake Meredith are sufficient to assess water supplies for sources in the Red River Basin and Lake Meredith. However, there has been no specific hydrology updates conducted for Palo Duro Reservoir in the Canadian River Basin. Therefore, the Panhandle Water Planning Group (PWPG) respectfully requests extending the hydrology for Palo Duro Reservoir and the additional hydrologic variance requests as discussed below. As

Region A
Panhandle Water
Planning Group

P.O. Box 9257, Amarillo, Texas 79105 | Phone: 806-372-3381 | Fax: 806-373-3268

intended by Senate Bill 1, the assessment of surface water availability in Region A will be conducted to accurately reflect water supplies that are available for use.

Safe Yield

Region A requests the use of safe yield for the allocation and distribution of surface water supplies from reservoirs within the region. Safe yield is the amount of water that can be used during the critical drought while leaving a minimum one- year supply in reserve. Safe yield is consistent with the current operations of surface water in the region and previous regional water planning. In accordance with the TWDB planning rules, firm yields will also be determined and reported in the plan.

Canadian River Basin

Water supplies from Lake Meredith will be assessed using the extended hydrology through 2017 that was approved for the 2021 Panhandle Water Plan. The hydrology for the Palo Duro Reservoir will be extended through the most recently available data (2022), and the run-of-river water rights will be assessed using the Canadian WAM with the extended hydrology through 2004.

Red River Basin

No changes are proposed.

The hydrologic variance request forms are included in Attachment A. Please contact Simone Kiel of Freese and Nichols at 817-735-7446 if you have any questions regarding our request.

Sincerely,

Ben Weinheimer

Ben Weinheimer
Chairman, Region A - Panhandle water Planning Group

CC: Michelle Foss, TWDB
Jarian Fred, PRPC
Simone Kiel, Freese and Nichols, Inc.

ATTACHMENT A
HYDROLOGIC VARIANCE REQUEST FORMS

PANHANDLE WATER PLANNING AREA (REGION A)

Surface Water Hydrologic Variance Request Checklist

Texas Water Development Board (TWDB) rules[1] require that regional water planning groups (RWPG) use most current Water Availability Models (WAM) from the Texas Commission on Environmental Quality (TCEQ) and assume full utilization of existing water rights and no return flows for surface water supply analysis. Additionally, evaluation of existing stored surface water available during Drought of Record conditions must be based on Firm Yield using anticipated sedimentation rates. However, the TWDB rules also allow, and **we encourage**, RWPGs to use more representative, water availability modeling assumptions; better site-specific information; or justified operational procedures other than Firm Yield with written approval (via a Hydrologic Variance) from the Executive Administrator in order to better represent and therefore prepare for expected drought conditions.

RWPGs must use this checklist, which is intended to save time and reduce effort, to request a Hydrologic Variance for estimating the availability of surface water sources. For Questions 4 – 10, please indicate whether the requested variance is for determining Existing Supply, Strategy Supply, or both. Please complete a separate checklist for each river basin in which variances are being requested.

Water Planning Region: A

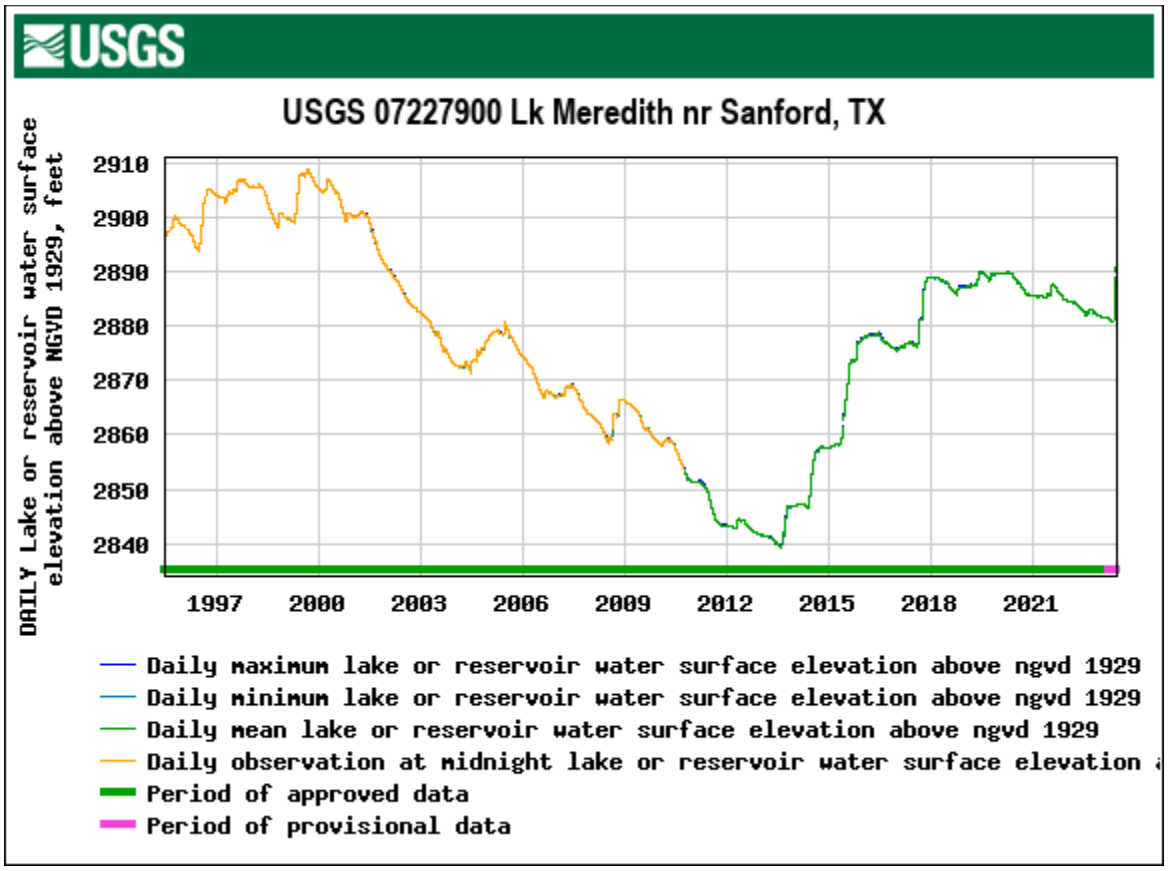
1. Which major river basin does the request apply to? Please specify if the request only applies part of the basin or only to certain reservoirs.

   Canadian River Basin. Lake Meredith, Palo Duro Reservoir, and Run-of-River.

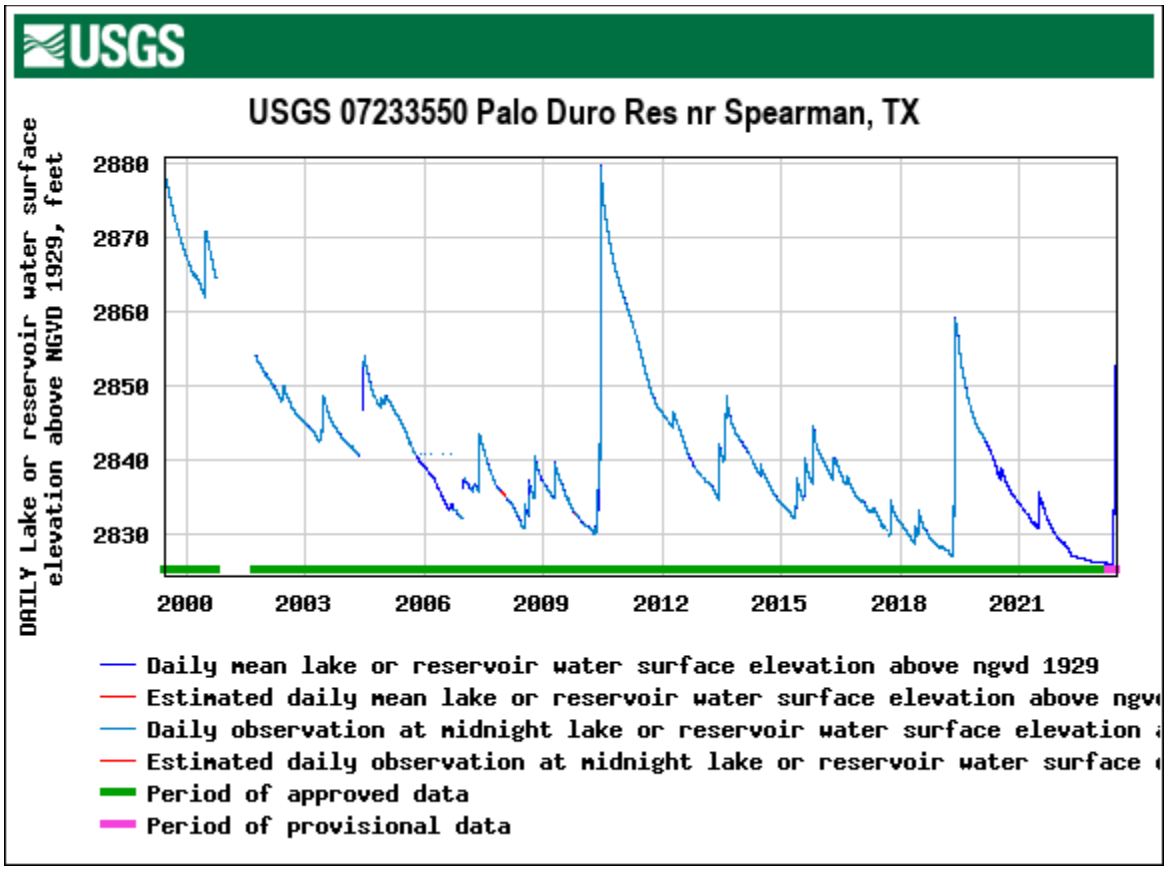
2. Please give a brief, bulleted, description of the requested hydrologic variances including how the alternative availability assumptions vary from rule requirements, how the modifications will affect the associated annual availability volume(s) in the regional water plan, and why the variance is necessary or provides a better basis for planning. You must provide more-detailed descriptions in the subsequent checklist questions. Attach any available documentation supporting the request.

   - Lake Meredith's request is the same as was approved for the fifth cycle of planning. Water supplies from Lake Meredith will be assessed using the extend hydrology through 2017 to capture the impact of continued low flows through 2016. As can be seen in the graph below, Lake Meredith has not reached similar low elevations since the hydrology was previously extended during the last planning cycle and an extension will not change the yield.

[1] 31 Texas Administrative Code (TAC) §§ 357.10(14) and 357.32(c)



- Region A requests to extend the hydrology for Palo Duro Reservoir through the most recently available data (2022). Last round Palo Duro Reservoir was assessed using the Canadian WAM with the extended hydrology through 2004. As can be seen below, Palo Duro Reservoir has experienced lower elevations since 2004.



- The Canadian River Basin Run-of-River for Region A's request is to use the same approved methodology as last round. Which includes assessment using the Canadian WAM with the extended hydrology through 2004.
- Safe yield – We request the use of safe yield for the reservoirs in Region A. Safe yield is consistent with the current operations of surface water in the region and previous regional water planning.

3. Was this request submitted in a previous planning cycle? If yes, please indicate which cycle and note how it is different, if at all, from the previous request?

   Yes

   Lake Meredith request remains the same as the previous planning cycle.

   Run-of-River request remains the same as the previous planning cycle.

   Palo Duro Reservoir request is new this cycle and hydrology is requested to be extended through the most recently available data (2022). Last cycle Palo Duro Reservoir was assessed using the Canadian WAM with hydrology through 2004.

4. Are you requesting to extend the period of record beyond the current applicable WAM hydrologic period? If yes, please describe the proposed methodology. Indicate whether you believe there is a new drought of record in the basin.

   Yes

   Existing Supply

   See response to #2 above for Palo Duro Reservoir. Hydrology will be extended using a mass balance method. There has been a new drought of record since 2004, which is the last year of available hydrology for the Canadian Basin.

5. Are you requesting to use a reservoir safe yield? If yes, please describe in detail how the safe yield would be calculated and defined, which reservoir(s) it would apply to, and why the modification is needed or preferrable for drought planning purposes.

   Yes

   Existing Supply

   Safe yield is the amount of water that can be used during the critical drought while leaving a minimum one-year supply in reserve. Safe yield is consistent with current operations of surface water in the region and previous regional water planning. This safe yield calculation would apply to Lake Meredith and Palo Duro Reservoir in the Canadian River Basin.

6. Are you requesting to use a reservoir yield other than firm yield or safe yield? If yes, please describe, in a bulleted list, each modification requested including how the alternative yield was calculated, which reservoir(s) it applies to, and why the modification is needed or preferrable for drought planning purposes. Examples of alternative reservoir yield analyses may include using an alternative reservoir level, conditional reliability, or other special reservoir operations.

   No

   Choose an item.

   Click or tap here to enter text.

7. Are you requesting to use a different model (such as a RiverWare or Excel-based models) than RUN 3 of the applicable TCEQ WAM? If yes, please describe the model being considered including how it incorporates water rights and prior appropriation and how it is more conservative than RUN 3 of the applicable TCEQ WAM.

   Yes

Existing Supply

We are requesting the use of an Excel spreadsheet model to calculate the reservoir yields for Lake Meredith and Palo Duro Reservoir. This model utilizes the hydrology through 2004 from the Canadian River WAM Run 3 that respects water right priorities. The hydrology extension is limited to only reservoir yield evaluations and is more conservative than WAM Run 3 because these models will capture new droughts of record that result in lower reliable supply.

8. Are you requesting to use a modified TCEQ WAM? If yes, please describe in a bulleted list all modifications in detail including all specific changes to the WAM and whether the modified WAM is more conservative than the TCEQ WAM RUN 3. Examples of WAM modifications may include adding subordination agreements, contracts, updated water rights, modified spring flows, updated lake evaporation, updated sedimentation[2], system or reservoir operations, or special operational procedures into the WAM.

   No

   Choose an item.

   Click or tap here to enter text.

9. Are you requesting to include return flows in the modeling? If yes, are you doing so to model an indirect reuse water management strategy (WMS)? Please provide complete details regarding the proposed methodology for determining reuse WMS availability.

   No

   Choose an item.

   Click or tap here to enter text.

10. Are any of the requested Hydrologic Variances also planned to be used by another region for the same basin? If yes, please indicate the other Region. Please indicate if unknown.

    No

    Click or tap here to enter text.

11. Please describe any other variance requests not captured on this checklist or add any other information regarding the variance requests on this checklist.

[2] Updating anticipated sedimentation rates does not require a hydrologic variance under 31 TAC § 357.10(14). The Technical Memorandum will require providing details regarding the sedimentation methodology utilized. Please consider providing that information with this request.

Click or tap here to enter text.

Surface Water Hydrologic Variance Request Checklist

Texas Water Development Board (TWDB) rules[1] require that regional water planning groups (RWPG) use most current Water Availability Models (WAM) from the Texas Commission on Environmental Quality (TCEQ) and assume full utilization of existing water rights and no return flows for surface water supply analysis. Additionally, evaluation of existing stored surface water available during Drought of Record conditions must be based on Firm Yield using anticipated sedimentation rates. However, the TWDB rules also allow, and **we encourage**, RWPGs to use more representative, water availability modeling assumptions; better site-specific information; or justified operational procedures other than Firm Yield with written approval (via a Hydrologic Variance) from the Executive Administrator in order to better represent and therefore prepare for expected drought conditions.

RWPGs must use this checklist, which is intended to save time and reduce effort, to request a Hydrologic Variance for estimating the availability of surface water sources. For Questions 4 – 10, please indicate whether the requested variance is for determining Existing Supply, Strategy Supply, or both. Please complete a separate checklist for each river basin in which variances are being requested.

Water Planning Region: A

1. Which major river basin does the request apply to? Please specify if the request only applies part of the basin or only to certain reservoirs.

   Red River Basin. Greenbelt Lake.

2. Please give a brief, bulleted, description of the requested hydrologic variances including how the alternative availability assumptions vary from rule requirements, how the modifications will affect the associated annual availability volume(s) in the regional water plan, and why the variance is necessary or provides a better basis for planning. You must provide more-detailed descriptions in the subsequent checklist questions. Attach any available documentation supporting the request.

   - Safe yield – The use of safe yield will decrease the available volumes. Safe yield is consistent with the current operations of surface water in the region and previous regional water planning.

3. Was this request submitted in a previous planning cycle? If yes, please indicate which cycle and note how it is different, if at all, from the previous request?

   Yes

   Safe yield was also requested in the fifth cycle. This request for safe yield is not different.

[1] 31 Texas Administrative Code (TAC) §§ 357.10(14) and 357.32(c)

4. Are you requesting to extend the period of record beyond the current applicable WAM hydrologic period? If yes, please describe the proposed methodology. Indicate whether you believe there is a new drought of record in the basin.

   No

   Choose an item.

   Click or tap here to enter text.

5. Are you requesting to use a reservoir safe yield? If yes, please describe in detail how the safe yield would be calculated and defined, which reservoir(s) it would apply to, and why the modification is needed or preferrable for drought planning purposes.

   Yes

   Existing Supply

   Safe yield is the amount of water that can be used during the critical drought while leaving a minimum one-year supply in reserve. Safe yield is consistent with current operations of surface water in the region and previous regional water planning. This safe yield calculation would apply to Greenbelt Lake in the Red River Basin.

6. Are you requesting to use a reservoir yield other than firm yield or safe yield? If yes, please describe, in a bulleted list, each modification requested including how the alternative yield was calculated, which reservoir(s) it applies to, and why the modification is needed or preferrable for drought planning purposes. Examples of alternative reservoir yield analyses may include using an alternative reservoir level, conditional reliability, or other special reservoir operations.

   No

   Choose an item.

   Click or tap here to enter text.

7. Are you requesting to use a different model (such as a RiverWare or Excel-based models) than RUN 3 of the applicable TCEQ WAM? If yes, please describe the model being considered including how it incorporates water rights and prior appropriation and how it is more conservative than RUN 3 of the applicable TCEQ WAM.

   No

   Choose an item.

   Click or tap here to enter text.

8. Are you requesting to use a modified TCEQ WAM? If yes, please describe in a bulleted list all modifications in detail including all specific changes to the WAM and whether the modified WAM is more conservative than the TCEQ WAM RUN 3. Examples of WAM modifications may include adding subordination agreements, contracts, updated water rights, modified spring flows, updated lake evaporation, updated sedimentation[2], system or reservoir operations, or special operational procedures into the WAM.

   No

   Choose an item.

   Click or tap here to enter text.

9. Are you requesting to include return flows in the modeling? If yes, are you doing so to model an indirect reuse water management strategy (WMS)? Please provide complete details regarding the proposed methodology for determining reuse WMS availability.

   No

   Choose an item.

   Click or tap here to enter text.

10. Are any of the requested Hydrologic Variances also planned to be used by another region for the same basin? If yes, please indicate the other Region. Please indicate if unknown.

    Unknown

    Click or tap here to enter text.

11. Please describe any other variance requests not captured on this checklist or add any other information regarding the variance requests on this checklist.

    Click or tap here to enter text.

[2] Updating anticipated sedimentation rates does not require a hydrologic variance under 31 TAC § 357.10(14). The Technical Memorandum will require providing details regarding the sedimentation methodology utilized. Please consider providing that information with this request.

Texas Water Development Board

P.O. Box 13231, 1700 N. Congress Ave.
Austin, TX 78711-3231, www.twdb.texas.gov
Phone (512) 463-7847, Fax (512) 475-2053

December 11, 2023

Mr. Ben Weinheimer
Chair
Region A Regional Water Planning Group
c/o Panhandle Regional Planning Commission
PO Box 9257
Amarillo, TX 79105

Dear Chairman Weinheimer:

I have reviewed your request dated July 18, 2023, for approval of alternative water supply assumptions to be used in determining existing surface water availability. This letter confirms that the TWDB approves the following assumptions:

1. Use extended hydrology through 2017 for Lake Meredith to assess existing supply.
2. Use extended hydrology through 2022 for Palo Duro Reservoir to assess existing supply.
3. Use the Canadian WAM with hydrology extended through 2004 for the assessment of run-of-river existing supply.
4. Use of a one-year safe yield for the allocation and distribution of surface water supplies from Lake Meredith and Palo Duro Reservoir in the Canadian River Basin.
5. Use an Excel spreadsheet model to calculate the reservoir yields for Lake Meredith and Palo Duro Reservoir.
6. Use safe yield for determining existing supply from Greenbelt Reservoir in the Red River Basin.

The TWDB has developed alternative auxiliary extended naturalized flows and reservoir evaporation data for certain river basins, which are available for RWPG consideration and optional use. These data sets are currently available through 2021 and will soon be available through 2022 for the Canadian WAM on the following website: https://www.twdb.texas.gov/surfacewater/data/ExtendedNatFlow/index.asp. The region is also authorized to apply these data sets to extend the hydrology through 2022 for sources in the Canadian River Basin, should the region choose to do so.

Although the TWDB approves the use of a one-year safe yield for developing estimates of current water supplies, firm yield for each reservoir must still be reported to TWDB in the online planning database and plan documents. For the purpose of evaluating potentially

feasible water management strategies, the TCEQ WAM Run 3 is to be used, unless a separate hydrologic variance for water management strategy availability is submitted and approved by the TWDB.

While the TWDB authorizes these modification to evaluate existing water supplies for development of the 2026 Region A RWP, it is the responsibility of the RWPG to ensure that the resulting estimates of water availability are reasonable for drought planning purposes and will reflect conditions expected in the event of actual drought conditions; and in all other regards will be evaluated in accordance with the most recent version of regional water planning contract Exhibit C, *General Guidelines for Development of the 2026 Regional Water Plans.*

If you have any questions, please do not hesitate to contact Michele Foss of our Regional Water Planning staff at 512-463-9225 or michele.foss@twdb.texas.gov if you have any questions.

Sincerely,

Jeff Walker
Executive Administrator

c: Alex Guerrero, Panhandle Regional Planning Commission
Jarian Fred, Panhandle Regional Planning Commission
Kristal Williams, P.E., Freese and Nichols, Inc.
Simone Kiel, P.E., Freese and Nichols, Inc.
Michele Foss, Water Supply Planning
Nelun Fernando, Ph.D., Surface Water

APPENDIX C
Methodology for Whitehorse Aquifer

Methodology for Other Aquifer Groundwater Availability: Region A

The estimate of recoverable volume for the Whitehorse and Quartermaster formations ("other aquifers") for Region A was calculated using TWDB Driller's Log averages for each county/formation and GIS coverage areas from the Geological Atlas of Texas outcrops for each of the counties/areas. Specifically, average well depth from recent driller's logs (2003-2013) was subtracted from the average water level that was measured at time of drilling to get an estimated saturated thickness for each county and zone (**Figure C-1**). The cleaved surface area was then multiplied by the estimated saturated thickness and a Specific Yield of 0.0025 (0.25%) to get the estimated recoverable volume of water in storage (**Table C-1**). **Table C-2** shows the total volume of water available per year over a period of 100 years. 100 years was the time period chosen to provide the estimate of yearly availability due to the fact that these are shallow outcrop aquifers, which in our estimation, fully recharge every 100 years.

Figure C-1: Outcrops of Whitehorse and Quartermaster formations and zone delineations for recoverable volume calculations for "Other" aquifers, Region A

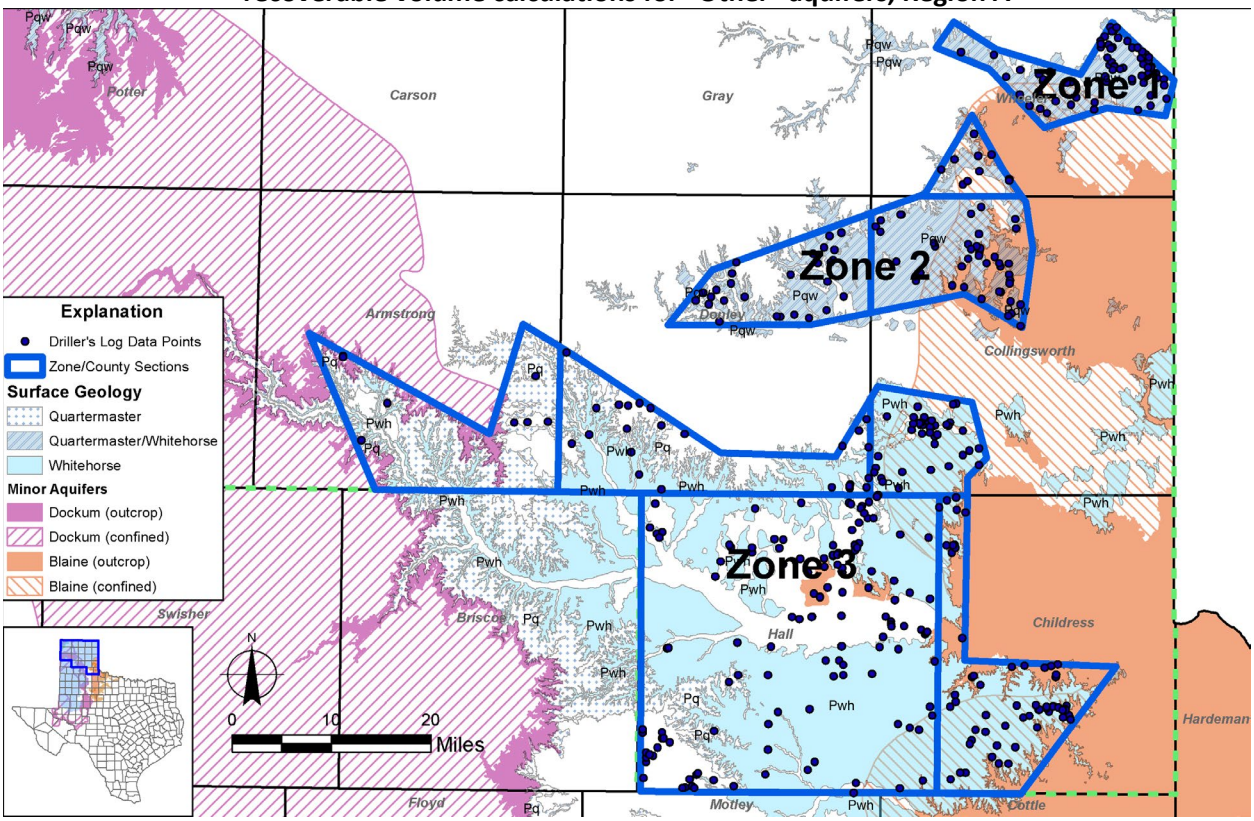


Table C-1: Calculations by County and Zone

County	Zone	Average Depth (ft)	Average Water Level (ft)	Area (acres)	Estimated Saturated Thickness (ft)	Estimated Recoverable Volume (ac-ft)
Armstrong	3	186	88	151,691	97	36,958
Childress	3	123	57	140,954	66	23,335
Collingsworth	2	155	81	109,997	74	20,345
Collingsworth	3	102	41	69,496	61	10,604
Donley	2	156	75	90,776	81	18,398
Donley	3	166	83	142,307	83	29,519
Hall	3	126	50	573,300	76	108,555
Wheeler	1	163	35	72,773	128	23,253
Wheeler	2	119	49	25,214	70	4,386

Table C-2: Total Calculated Volume Available Per Year Over 100 Years

County	Availability (ac-ft/yr) over 100 years
Armstrong	370
Childress	233
Collingsworth	309
Donley	479
Hall	1,086
Wheeler	276

APPENDIX D
Methodology for Identifying Potentially Feasible WMSs

MEMORANDUM

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TO: Panhandle Water Planning Group

CC: File

FROM: Simone Kiel

SUBJECT: Methodology to Identify Potentially Feasible Water Management Strategies

DATE: 10/9/2023

PROJECT: PPC21833

The Regional Water Planning rules requires each region to develop and document the process to identify potentially feasible water management strategies (PFWMS). This process is in addition to the process set forth by the TWDB to evaluate each PFWMS. This memorandum presents the proposed process to be used by the Panhandle Water Planning Group (PWPG).

For the Panhandle Water Planning Area (PWPA), the identification process for PFWMS will follow the sequence below:

1. Identify entities with needs
2. Review recommended strategies in previous Regional Water Plan (RWP)
3. Review new studies/ reports
4. Determine if new or changed strategies are needed
5. Review strategy types appropriate for the PWPA
6. Contact entity for input
7. Contact PWPG representative for county-wide WUGs
8. Verify recommendations

Section 2.5.1 of the *First Amended General Guidelines for Development of the 2026 Regional Water Plans* provides guidance on potentially feasible WMSs by listing 24 types of WMSs that the regional water planning groups (RWPGs) should consider for all identified water needs.

While the TWDB list is comprehensive, not each strategy type is appropriate for every need, and some strategy types may not be appropriate for PWPA water users. To determine whether a strategy is potentially feasible, the first considerations are:

- A strategy must use proven technology and must be technically feasible.
- A strategy should have an identifiable sponsor.
- A strategy must consider end use. This includes water quality, economics, geographic constraints, etc. For example, long transmission systems to move water for agricultural use is not economically feasible.
- A strategy must meet existing regulations.

The second consideration is whether a strategy would provide sufficient water to meet a projected need or a sizeable portion of the need. Considerations at this juncture include:

- Is there available existing supply that is not already allocated to another user?
- Can new water be developed? If yes, identify the potential sources.
- Does the water quality meet the end use requirements? If not, can it be treated?
- Are there any technical considerations that would preclude the feasibility of the strategy type? For example, are there suitable geologic formations for aquifer storage and recovery?

Strategy types that will be reviewed for consideration as potentially feasible for the PWPA include:

- Water conservation
  - Review for applicability and consider for all WUGs with a need
  - Consider water conservation for all municipal WUGs
  - Consider water conservation for all irrigation WUGs
- Reuse
  - Consider for WUGs with needs that generate a waste stream. This includes municipal, manufacturing and mining WUGs.
- Management of existing water supplies/System optimization
  - Consider for WUGs/WWPs that operate multiple water supply sources
- Conjunctive use
  - Consider for WUGs/WWPs that use or will use both surface water and groundwater sources
- Acquisition of available existing water supplies
  - Includes purchase of surface water and groundwater rights
- Developing regional water supply facilities or providing regional management of water supply facilities
- Developing large-scale desalination facilities for brackish groundwater that serve local or regional brackish groundwater production zones identified and designated under TWC §16.060(b)(5)
  - Consider for WUGs/WWPs that intend to develop large scale brackish groundwater for municipal use
- Voluntary transfer of water within the region using, but not limited to, contracts, water marketing, regional water banks, sales, leases, options, subordination agreements, and financing agreements
- Emergency transfer of water under TWC §11.139
- Enhancements of yields.
  - This may be considered with other strategies, such as Brush Control and Precipitation Enhancement
- Improvements to water quality
- New groundwater supply
- Interbasin transfers of surface water
  - This would likely be considered as part of a voluntary transfer of water strategy
- Brush control
- Precipitation enhancement
  - Consider for areas with an existing precipitation enhancement program
- Aquifer storage and recovery

There are several strategy types that likely are not appropriate for PWPA water users. However, they may be considered if a project sponsor requests a specific strategy.

- Drought management. Drought management is an emergency measure and is generally not recommended for long-term supply.
- New surface water supply. There are limited opportunities to develop new surface water supplies in the PWPA.

- Reallocation of reservoir storage to new uses. There are limited opportunities for reservoir storage reallocation in the PWPA.

Three strategy types identified by the TWDB are not appropriate for the PWPA. These include:

- Developing large-scale desalination facilities for marine seawater that serve local or regional entities. The PWPA does not have access to seawater.
- Cancellation of water rights. The run-of-river water rights in the Canadian River Basin and upper Red River Basin have little supply. Cancellation of water rights in the PWPA would not provide additional water.
- Rainwater harvesting. The average rainfall over the PWPA from west to east ranges from 14 to 24 inches per year. During drought there is very little rainfall. This is not a reliable strategy for the PWPA.

APPENDIX E
List of Potentially Feasible Water Management Strategies

2026 Panhandle Water Plan DRAFT List of Potentially Feasible Water Management	
Entity Name	**Potentially Feasible WMSs**
AMARILLO	MUNICIPAL CONSERVATION
AMARILLO	POTTER COUNTY WELL FIELD - PHASE 2
AMARILLO	ROBERTS COUNTY WELL FIELD - WITH AND WITHOUT CRMWA
AMARILLO	AQUIFER STORAGE AND RECOVERY
AMARILLO	INDIRECT REUSE
AMARILLO	DIRECT POTABLE REUSE
BOOKER	DRILL ADDITIONAL GROUNDWATER WELL
BOOKER	MUNICIPAL CONSERVATION
BORGER	DRILL ADDITIONAL GROUNDWATER WELL
BORGER	VOLUNTARY TRANSFER FROM OTHER USERS (CRMWA)
BORGER	MUNICIPAL CONSERVATION
CACTUS	DRILL ADDITIONAL GROUNDWATER WELL
CACTUS	MUNICIPAL CONSERVATION
CANADIAN	MUNICIPAL CONSERVATION
CANADIAN RIVER MUNICIPAL WATER AUTHORITY	EXPANSION OF ROBERTS COUNTY WELL FIELD
CANADIAN RIVER MUNICIPAL WATER AUTHORITY	CONSTRUCTION OF CRMWA II PIPELINE (WITH AND WITHOUT AMARILLO)
CANADIAN RIVER MUNICIPAL WATER AUTHORITY	DESALINATION OF SURFACE WATER
CANADIAN RIVER MUNICIPAL WATER AUTHORITY	CONJUNCTIVE USE
CANADIAN RIVER MUNICIPAL WATER AUTHORITY	BRUSH CONTROL
CANYON	DRILL ADDITIONAL GROUNDWATER WELL
CANYON	MUNICIPAL CONSERVATION
CANYON	PURCHASE FROM AMARILLO
CHILDRESS	VOLUNTARY TRANSFER FROM OTHER USERS (GREENBELT)
CHILDRESS	MUNICIPAL CONSERVATION
CLARENDON	VOLUNTARY TRANSFER FROM OTHER USERS (GREENBELT)
CLARENDON	MUNICIPAL CONSERVATION
CLAUDE	MUNICIPAL CONSERVATION
COUNTY-OTHER (HALL)	ADVANCED TREATMENT - HALL COUNTY OTHER (LAKEVIEW)
COUNTY-OTHER (HALL)	NEW GROUNDWATER SOURCE - HALL COUNTY OTHER (BRICE-LESLY)
COUNTY-OTHER (HALL)	NEW GROUNDWATER SOURCE - HALL COUNTY OTHER (ESTELLINE)
DALHART	MUNICIPAL CONSERVATION
DUMAS	DRILL ADDITIONAL GROUNDWATER WELL
DUMAS	MUNICIPAL CONSERVATION
FRITCH	DRILL ADDITIONAL GROUNDWATER WELL
FRITCH	MUNICIPAL CONSERVATION
GREENBELT MUNICIPAL & INDUSTRIAL WATER AUTHORITY	DRILL ADDITIONAL GROUNDWATER WELL (DONLEY COUNTY)
GRUVER	DRILL ADDITIONAL GROUNDWATER WELL
GRUVER	MUNICIPAL CONSERVATION

2026 Panhandle Water Plan DRAFT List of Potentially Feasible Water Management	
Entity Name	**Potentially Feasible WMSs**
IRRIGATION (ALL COUNTIES)	IRRIGATION CONSERVATION
LAKE TANGLEWOOD	MUNICIPAL CONSERVATION
LIVESTOCK (CHILDRESS)	DRILL ADDITIONAL GROUNDWATER WELL
LIVESTOCK (HARTLEY)	DRILL ADDITIONAL GROUNDWATER WELL
LIVESTOCK (MOORE)	DRILL ADDITIONAL GROUNDWATER WELL
MANUFACTURING (HUTCHINSON)	VOLUNTARY TRANSFER FROM OTHER USERS (BORGER)
MANUFACTURING (LIPSCOMB)	VOLUNTARY TRANSFER FROM OTHER USERS (BOOKER)
MANUFACTURING (MOORE)	VOLUNTARY TRANSFER FROM OTHER USERS (CACTUS)
MANUFACTURING (POTTER)	VOLUNTARY TRANSFER FROM OTHER USERS (AMARILLO)
MANUFACTURING (RANDALL)	VOLUNTARY TRANSFER FROM OTHER USERS (AMARILLO)
MCLEAN	MUNICIPAL CONSERVATION
MEMPHIS	MUNICIPAL CONSERVATION
MIAMI	MUNICIPAL CONSERVATION
MIAMI	DRILL ADDITIONAL GROUNDWATER WELL
PAMPA	AQUIFER STORAGE AND RECOVERY
PAMPA	MUNICIPAL CONSERVATION
PAMPA	VOLUNTARY TRANSFER FROM OTHER USERS (CRMWA)
PANHANDLE	MUNICIPAL CONSERVATION
PERRYTON	DRILL ADDITIONAL GROUNDWATER WELL
PERRYTON	MUNICIPAL CONSERVATION
SHAMROCK	MUNICIPAL CONSERVATION
SHAMROCK	DRILL ADDITIONAL GROUNDWATER WELL
SPEARMAN	MUNICIPAL CONSERVATION
STINNETT	DRILL ADDITIONAL GROUNDWATER WELL
STINNETT	MUNICIPAL CONSERVATION
STRATFORD	MUNICIPAL CONSERVATION
STRATFORD	DRILL ADDITIONAL GROUNDWATER WELL
SUNRAY	MUNICIPAL CONSERVATION
TCW SUPPLY INC	MUNICIPAL CONSERVATION
TEXLINE	MUNICIPAL CONSERVATION
VEGA	MUNICIPAL CONSERVATION
WELLINGTON	DRILL ADDITIONAL GROUNDWATER WELL
WELLINGTON	ADVANCED TREATMENT
WELLINGTON	MUNICIPAL CONSERVATION
WHEELER	DRILL ADDITIONAL GROUNDWATER WELL
WHEELER	MUNICIPAL CONSERVATION
WHITE DEER	MUNICIPAL CONSERVATION
PWPA WUGs	OUT OF STATE WATER
PWPA WUGs WITH IMPAIRED GROUNDWATER	GROUNDWATER DESALINATION

APPENDIX F
Infeasible Water Management Strategy Evaluation

Tab 1: Recommended WMS projects associated with an online decade of 2020

WMS Project identified as infeasible? (Y/N)	RWPG Comments	Project Sponsor Region	Project Category	WMS Project Id	WMS Project Name	Capital Cost	Online Decade	Project Sponsors	Project Components	Project Related WMS Types	Project Related Strategy Supply 2020 AFY	Project Related Strategy Supply 2030 AFY	Project Related Strategy Supply 2040 AFY	Project Related Strategy Supply 2050 AFY	Project Related Strategy Supply 2060 AFY	Project Related Strategy Supply 2070 AFY
N	Amarillo confirmed this process has begun.	A	Other project type	3882	Advanced Metering Infrastructure - Amarillo	$31,000,000	2020	Amarillo	Data Gathering/Monitoring Technology	Municipal conservation	1,485	1,655	1,831	2,008	2,198	2,398
N	Email sent to Wellington with no response. Feasible.	A	Other project type	899	Advanced Treatment (Nitrate Removal) - Wellington	$8,262,000	2020	Wellington Municipal Water System	New Water Treatment Plant; Storage Tank	Groundwater wells and other	560	660	660	660	660	660
N	Email sent to Cactus with no response. Feasible.	A	Other project type	945	Develop New Well Field (Ogallala Aquifer) - Cactus	$16,598,000	2020	Cactus Municipal Water System	Conveyance/Transmission Pipeline; Multiple Wells/Well Field	Groundwater wells and other	5,000	5,000	5,000	5,000	5,000	5,000
N	Email sent to Dalhart with no response. Feasible.	A	Other project type	831	Develop Ogallala Aquifer Supplies - Dalhart	$7,279,000	2020	Dalhart	Multiple Wells/Well Field	Groundwater wells and other	3,140	3,140	3,140	3,140	3,140	3,140
N	No identifiable entity to contact.	A	Other project type	709	Irrigation Conservation - Armstrong County	$206,924	2020	Irrigation (Armstrong)	Conservation - Agricultural	Agricultural conservation	290	542	1,014	1,200	1,314	1,415
N	No identifiable entity to contact.	A	Other project type	710	Irrigation Conservation - Carson County	$2,501,489	2020	Irrigation (Carson)	Conservation - Agricultural	Agricultural conservation	7,290	12,416	24,597	28,628	30,535	32,317
N	No identifiable entity to contact.	A	Other project type	711	Irrigation Conservation - Childress County	$453,203	2020	Irrigation (Childress)	Conservation - Agricultural	Agricultural conservation	655	1,095	2,194	2,547	2,704	2,854
N	No identifiable entity to contact.	A	Other project type	712	Irrigation Conservation - Collingsworth County	$1,271,751	2020	Irrigation (Collingsworth)	Conservation - Agricultural	Agricultural conservation	2,610	3,966	7,955	9,658	9,419	9,757
N	No identifiable entity to contact.	A	Other project type	713	Irrigation Conservation - Dallam County	$8,083,969	2020	Irrigation (Dallam)	Conservation - Agricultural	Agricultural conservation	24,329	43,270	80,019	87,678	80,502	83,654
N	No identifiable entity to contact.	A	Other project type	714	Irrigation Conservation - Donley County	$870,018	2020	Irrigation (Donley)	Conservation - Agricultural	Agricultural conservation	1,115	1,888	3,636	4,301	4,681	5,054
N	No identifiable entity to contact.	A	Other project type	715	Irrigation Conservation - Gray County	$987,478	2020	Irrigation (Gray)	Conservation - Agricultural	Agricultural conservation	2,222	3,766	7,320	8,612	9,308	9,981
N	No identifiable entity to contact.	A	Other project type	716	Irrigation Conservation - Hall County	$816,256	2020	Irrigation (Hall)	Conservation - Agricultural	Agricultural conservation	1,898	3,025	6,317	7,232	7,518	7,796
N	No identifiable entity to contact.	A	Other project type	717	Irrigation Conservation - Hansford County	$4,742,867	2020	Irrigation (Hansford)	Conservation - Agricultural	Agricultural conservation	14,572	25,101	49,532	57,670	61,580	65,189
N	No identifiable entity to contact.	A	Other project type	718	Irrigation Conservation - Hartley County	$9,018,439	2020	Irrigation (Hartley)	Conservation - Agricultural	Agricultural conservation	27,160	48,052	89,129	99,463	94,245	99,380
N	No identifiable entity to contact.	A	Other project type	719	Irrigation Conservation - Hemphill County	$335,683	2020	Irrigation (Hemphill)	Conservation - Agricultural	Agricultural conservation	97	194	294	387	478	569
N	No identifiable entity to contact.	A	Other project type	720	Irrigation Conservation - Hutchinson County	$1,152,269	2020	Irrigation (Hutchinson)	Conservation - Agricultural	Agricultural conservation	4,432	7,624	15,285	17,656	18,663	19,562
N	No identifiable entity to contact.	A	Other project type	721	Irrigation Conservation - Lipscomb County	$1,121,165	2020	Irrigation (Lipscomb)	Conservation - Agricultural	Agricultural conservation	2,167	3,768	7,135	8,478	9,291	10,074
N	No identifiable entity to contact.	A	Other project type	722	Irrigation Conservation - Moore County	$4,675,364	2020	Irrigation (Moore)	Conservation - Agricultural	Agricultural conservation	16,630	29,092	57,177	64,138	59,240	60,841
N	No identifiable entity to contact.	A	Other project type	723	Irrigation Conservation - Ochiltree County	$2,341,044	2020	Irrigation (Ochiltree)	Conservation - Agricultural	Agricultural conservation	7,080	12,160	23,955	27,927	29,865	31,668
N	No identifiable entity to contact.	A	Other project type	724	Irrigation Conservation - Oldham County	$141,967	2020	Irrigation (Oldham)	Conservation - Agricultural	Agricultural conservation	255	495	916	1,085	1,191	1,284
N	No identifiable entity to contact.	A	Other project type	725	Irrigation Conservation - Potter County	$44,158	2020	Irrigation (Potter)	Conservation - Agricultural	Agricultural conservation	120	272	505	585	631	661
N	No identifiable entity to contact.	A	Other project type	726	Irrigation Conservation - Randall County	$500,354	2020	Irrigation (Randall)	Conservation - Agricultural	Agricultural conservation	1,003	2,027	3,820	4,454	4,810	5,089
N	No identifiable entity to contact.	A	Other project type	727	Irrigation Conservation - Roberts County	$222,399	2020	Irrigation (Roberts)	Conservation - Agricultural	Agricultural conservation	683	1,158	2,283	2,666	2,855	3,034
N	No identifiable entity to contact.	A	Other project type	728	Irrigation Conservation - Sherman County	$7,394,465	2020	Irrigation (Sherman)	Conservation - Agricultural	Agricultural conservation	25,895	45,383	88,429	103,368	104,313	111,300
N	No identifiable entity to contact.	A	Other project type	729	Irrigation Conservation - Wheeler County	$420,824	2020	Irrigation (Wheeler)	Conservation - Agricultural	Agricultural conservation	895	1,505	3,008	3,493	3,712	3,918
N	Conservation. It is assumed conservation projections are budgeted for on a yearly basis. Feasible.	A	Other project type	2890	Water Audit and Leak Repair - Amarillo	$170,849,900	2020	Amarillo	Water Loss Control	Municipal conservation	2,077	2,268	2,472	2,692	2,943	3,209
N	Conservation. It is assumed conservation projections are budgeted for on a yearly basis. Feasible.	A	Other project type	2891	Water Audit and Leak Repair - Canyon	$11,725,000	2020	Canyon	Water Loss Control	Municipal conservation	174	191	208	227	249	271
N	Conservation. It is assumed conservation projections are budgeted for on a yearly basis. Feasible.	A	Other project type	2892	Water Audit and Leak Repair - Dumas	$14,179,600	2020	Dumas	Water Loss Control	Municipal conservation	115	128	142	158	175	192

WMS Project identified as infeasible? (Y/N)	RWPG Comments	Project Sponsor Region	Project Category	WMS Project Id	WMS Project Name	Capital Cost	Online Decade	Project Sponsors	Project Components	Project Related WMS Types	Project Related Strategy Supply 2020 AFY	Project Related Strategy Supply 2030 AFY	Project Related Strategy Supply 2040 AFY	Project Related Strategy Supply 2050 AFY	Project Related Strategy Supply 2060 AFY	Project Related Strategy Supply 2070 AFY
N	Conservation. It is assumed conservation projections are budgeted for on a yearly basis. Feasible.	A	Other project type	2894	Water Audit and Leak Repair - Higgins	$594,500	2020	Higgins Municipal Water System	Water Loss Control	Municipal conservation	8	9	9	10	10	10
N	Conservation. It is assumed conservation projections are budgeted for on a yearly basis. Feasible.	A	Other project type	2895	Water Audit and Leak Repair - Turkey	$549,800	2020	Turkey Municipal Water System	Water Loss Control	Municipal conservation	4	4	4	4	4	4

Tab 2: Select Recommended WMS projects associated with an online decade of later than 2020. See workbook data description tab for details about selected projects.

WMS Project identified as infeasible? (Y/N)	RWPG Comments	Project Sponsor Region	Project Category	WMS Project Id	WMS Project Name	Capital Cost	Online Decade	Project Sponsors	Project Components	Project Related Strategy Supply 2020 AFY	Project Related Strategy Supply 2030 AFY	Project Related Strategy Supply 2040 AFY	Project Related Strategy Supply 2050 AFY	Project Related Strategy Supply 2060 AFY	Project Related Strategy Supply 2070 AFY
N	Can be online by 2030	A	Aquifer storage and recovery	3906	Aquifer Storage and Recovery - CRMWA	$27,815,000	2030	Canadian River Municipal Water Authority	Injection Well; Multiple Wells/ Well Field	0	12,000	11,500	11,500	11,500	11,500

Tab 2: Recommended source related WMS strategy supply with an online decade of 2020

WMS identified as infeasible? (Y/N)	RWPG Comments	WMS Sponsor Region	WMS Type	WMS Description	WMSId	WMS Name	WMS Group Name	WMS Sponsor and/or select WUG Beneficiary List	Source Description	Strategy Supply 2020	Strategy Supply 2030	Strategy Supply 2040	Strategy Supply 2050	Strategy Supply 2060	Strategy Supply 2070	Is Strategy Supply Related to a WMS Project?
N	Email sent to Wellington with no response. Feasible.	A	Groundwater wells and other	New Infrastructure Only	4803	Advanced Treatment - Wellington		Wellington Municipal Water System	Seymour Aquifer | Collingsworth	560	560	560	560	560	560	Y
N	Email sent to Cactus with no response. Feasible.	A	Groundwater wells and other	Groundwater Well Development	654	Develop New Well Field (Ogallala Aquifer) - Cactus		Cactus Municipal Water System	Ogallala Aquifer | Moore	5,000	5,000	5,000	5,000	5,000	5,000	Y
N	Email sent to Dalhart with no response. Feasible.	A	Groundwater wells and other	Groundwater Well Development	602	Develop Ogallala Aquifer Supplies - Dalhart		Dalhart	Ogallala and Rita Blanca Aquifers | Hartley	3,140	3,140	3,140	3,140	3,140	3,140	Y
N	CRMWA confirmed they are spending money on brush control.	A	Other strategies	Brush Control	4808	Brush Control - CRMWA		Canadian River Municipal Water Authority - Unassigned Water Volumes	Meredith Lake/Reservoir	2,500	2,500	2,500	2,500	2,500	2,500	N