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April 25, 2024

Mr. Jeff Walker
Executive Administrator
Texas Water Development Board
1700 N. Congress Ave.
Austin, TX 78711-32331

Subject: DRAFT Technical Memorandum for the 2026 Plateau Regional Water Plan

Dear Mr. Walker:

Carollo Engineers, Inc., is pleased to submit this Technical Memorandum on behalf of the Plateau Water Planning Group (PWPG) - Region J, in order to meet the contractual and TWDB requirements specified in the Scope of Work Task 4C, as referenced in Section 2.12.1 of the Second Amended General Guidelines for Development of the 2026 Regional Water Plans (September 2023). This Technical Memorandum was authorized for submittal by the PWPG at the April 25, 2024, meeting of the PWPG in Kerrville, Texas.

The attached reports comprising the main body of this submittal are the preliminary output of Region J analyses from the Regional Water Planning Application (DB27), as prepared by the Region J technical consultants. Ongoing work and revisions by the consultants, and by the other regional water planning groups, will likely necessitate further modifications to the amounts reflected herein.

If any additional information is necessary, please feel free to reach out at your convenience. Thank you again for the opportunity to participate in this important process for the Plateau Regional Water Planning Area.

Sincerely,

CAROLLO ENGINEERS, INC.

Jennifer Jackson
Technical Consultant Project Manager
Carollo Engineers, Inc.

Enclosures: Appendices

cc: Mr. Jonathan Letz
Ms. Tara Bushnoe
Ms. Jody Grinstead
Mr. Tony Smith

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Provided herein are descriptions of the reports and information comprising the contractually required content submitted by the PWPG. The TWDB has provided a "checklist" identifying those required elements, and this memorandum presents those elements identified in the checklist.

TWDB DB27 Reports

The TWDB has developed and utilizes the 2027 State Water Planning Database (DB27) as a tool that "will synthesize regions' data and provide data reports that must be incorporated into each Technical Memorandum and referenced by hyperlink in each Initially Prepared Plan (IPP) and final adopted Regional Water Plan (RWP)". The TWDB guidance document further states that RWPGs will complete and submit, via the DB27 interface, all data generated or updated during the current cycle of planning to the TWDB in accordance with TWDB specifications prior to submitting Technical Memorandums and IPPs.

The following TWDB DB27 reports required for the Technical Memorandum are presented in Appendices, as shown below:

- TWDB DB27 Report – 2026 RWP WUG Population (Appendix A) presenting population projections by WUG, county, and river basin);
- TWDB DB27 Report – WUG Demand (Appendix B) presenting water demand projections by WUG, county, and river basin;
- TWDB DB27 Report – Source Availability (Appendix C) presenting water availability by source;
- TWDB DB27 Report – WUG Existing Water Supply (Appendix D) presenting existing water supplies by WUG, county, and river basin;
- TWDB DB27 Report – WUG Needs/Surplus (Appendix E) presenting identified water needs by WUG, county, and river basin;
- TWDB DB27 Report – WUG Data Comparison to 2021 RWP (Appendix F) presenting a comparison of supply, demand, and needs between the 2021 and 2026 RWP at a county level;
- TWDB DB27 Report – Source Data Comparison to 2021 RWP (Appendix G) presenting a comparison of availability by source type between the 2021 and 2026 RWP at a county level.

As required, all data entered by the PWPG into DB27 are rounded to the nearest whole number to avoid cumulative data errors. Data are entered into DB27 such that the net water balance for each source is zero or greater than zero, except for those sources that may be over allocated initially due to conflicting data with another regional water planning area.

Surface Water Availability

The Plateau Region straddles several different river basins, rather than generally following a single river basin or a large part of a single river basin. From west to east, these basins include the Rio Grande, Nueces, Colorado, San Antonio, and Guadalupe. The headwaters of three of these river basins (Nueces, San Antonio and Guadalupe), as well as major tributaries of the Rio Grande and Colorado River, originate in this Region. In its guidelines for Regional Water Planning, the TWDB requires that water availability be based on results derived from the official

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Texas Commission on Environmental Quality (TCEQ) Water Availability Models (WAMs), unless a hydrologic variance request is submitted.

The TCEQ WAMs, which have been developed for all river basins in Texas, simulate the management, operation, and use of streamflow and reservoirs over a historical period of record, adhering to the prior appropriation doctrine that governs Texas' water right priority system. The TCEQ WAMs are the fundamental tools used to determine surface water availability for water rights permitting and contain information about water rights in each respective river basin.

There are several versions of each of these WAMs. TWDB guidance stipulates that regional water planning groups use the Full Authorization version that TCEQ employs to analyze applications for perpetual water rights. This scenario is often referred to as WAM "Run 3." The assumptions in the TCEQ WAM Run 3 are conservatively modeled for permitting purposes, allowing for consideration of water supply availability under drought-of-record conditions to ensure water demands can be met under critical circumstances. For the development of source water availability used in the 2026 Region J Regional Water Plan, the latest versions of the TCEQ WAMs (Run 3) for these basins have been used. The hydrologic variance request submitted on October 27, 2023, is included in Appendix H.1, and the TWDB's January 4, 2024, response granting the requested variances is included in Appendix H.2.

For reservoirs with permitted storage capacities greater than 5,000 ac-ft, estimates of source availability have been determined using the TCEQ WAMs. Table 1 presents a summary of the firm yield estimates for major reservoirs used for supply in Region J.

Table 1 Yields for Reservoirs in the Region J Area (ac-ft/yr)

Water Right ID	Reservoir Name	Basin	Firm Yield	
			2030	2080
2130	Medina	San Antonio	0	0

The modeled source availabilities for run-of-river water rights and rights with small reservoirs have been entered into the TWDB water planning database (DB27). Summaries of surface water availability by county are not presented herein but are documented in the database reports collected in Appendix C.

The modeled source availabilities for run-of-river water rights and rights with small reservoirs have been entered into the TWDB water planning database (DB27). Summaries of surface water availability by county are not presented herein but are documented in the database reports collected in Appendix C.

Model versions, input, and output files are listed in Appendix I, which includes an electronic submittal of the files that is separate from this document.

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Groundwater Availability

The principal aquifers in the Plateau Region are the Trinity, Edwards-Trinity (Plateau), Edwards (Balcones Fault Zone), Austin Chalk, Frio and Nueces River Alluviums and the Ellenburger-San Saba Aquifer. Presented in this section is documentation of the methodologies utilized for the PWPG's estimation of groundwater availabilities to date. As further information is developed, the methods employed herein are subject to revision as work progresses.

For planning purposes, the total source groundwater availability is the sum of Modeled Available Groundwater (MAGs) and non-MAG groundwater availability. MAGs are developed by the TWDB based on the Desired Future Conditions (DFCs) determined by the Groundwater Management Areas (GMAs). Region J utilized the Modeled Available Groundwater (MAG) estimates based on desired future conditions adopted by Groundwater Management Areas 7, 9 and 10. MAGs have been provided by the TWDB and have been determined for all the major and most of the minor aquifer systems within the Region J planning area.

Per TWDB guidelines and in accordance with TAC §357.32(d)(2), a regional water planning group with no groundwater conservation districts (GCDs) within its planning area shall determine the availability of relevant aquifers for regional planning purposes. Region J qualifies as there is not a GCD within Val Verde County. If there is a greater need for groundwater than estimated by the MAG on a county/aquifer/basin basis, a more refined assessment of groundwater availability will be performed to evaluate if increasing availability can be justified hydrogeologically. For those WUGs/sellers wherein existing or planned pumpage exceeds MAG amounts, a more detailed analysis of the entity's pumping, typical production of the aquifer, and relevant information from applicable GMAs will be considered towards development of the available groundwater supply for the entity. Current infrastructure (number of wells, well field capacity, peaking factors, etc.) will also be considered when evaluating future water management strategies. These analyses, along with their accordant methodologies, will be submitted to TWDB for review and consideration of approval prior to incorporation into the IPP, per requirement.

Non-MAG availability is the availability in aquifers designated as non-relevant by GMAs. For aquifers or portions of aquifers without a MAG, the TWDB provided “non-MAG availability” values. These values may be based on results from groundwater modeling during the development of the MAGs for other aquifers or on other methodologies.

A table summarizing the groundwater availability methodology is included as Appendix J of this memorandum.

Process for Identification of Potentially Feasible Water Management Strategies

At the October 26, 2023, public meeting of the PWPG held in Kerrville, Texas, the PWPG adopted a process for identifying potentially feasible Water Management Strategies (WMSs), as required by 31 TAC §357.12(b). The process was documented, and incorporated input received, and all potentially feasible WMSs were listed. The criteria were determined by the PWPG and represent an equitable and consistent evaluation and application of all potentially feasible WMSs for each identified water supply need.

In addition, as required by statute and rules (TWC §16.053(e)(3), and 31 TAC §357.34(c)), the PWPG has considered 24 various types of WMSs for all identified water needs.

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Below summarizes the process approved for identifying potentially feasible water management strategies for the development of the 2024 Plateau Water Plan.

Strategy Types

1. conservation;
2. drought management;
3. reuse;
4. management of existing water supplies;
5. conjunctive use;
6. acquisition of available existing water supplies;
7. development of new water supplies;
8. developing regional water supply facilities or providing regional management of water supply facilities;
9. developing large-scale desalination facilities for seawater or brackish groundwater that serve local or regional brackish groundwater production zones identified and designated under Texas Water Code (TWC) §16.060(b)(5);
10. developing large-scale desalination facilities for marine seawater that serve local or regional entities;
11. 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;
12. emergency transfer of water under TWC §11.139;
13. interbasin transfers of surface water;
14. system optimization;
15. reallocation of reservoir storage to new uses;
16. enhancements of yields;
17. improvements to water quality;
18. new surface water supply;
19. new groundwater supply;
20. brush control;
21. precipitation enhancement;
22. aquifer storage and recovery;
23. cancellation of water rights; and
24. rainwater harvesting.

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Other potential projects considered for the initial list included:

- appropriate strategies from the *2021 Plan*
- water-loss audits and line replacement
- projects suggested by municipalities through a survey
- projects that are currently or have recently applied to the TWDB for funding

Needs Analysis

1. Receive a *Needs Analysis Report* from the TWDB, which provides a comparison of existing water supplies and projected water demands for each water user group (WUG) and wholesale water provider (WWP) in the Region. Based on this comparison, the report identifies WUGs and WWPs that are expected to experience needs for additional water supplies within the 50-year time frame of the regional water plan.

Identification and Selection Process

2. Review the potential infeasibility and implementation status identifying:

- If strategy contemplates permitting and/or construction;
- If strategy is near-term or necessitates significant time for implementation;
- If the potential sponsor(s) have taken, or have indicated they will take, affirmative steps towards the strategy's implementation. Affirmative steps may include, but not be limited to:
    i. Spending money on the strategy or project;
    ii. Voting to spend money on the strategy or project;
    iii. Applying for a federal or state permit for the strategy or project

3. Review and consider recommended water management strategies adopted by the water planning group for the *2021 Plateau Water Plan*.
4. Review and consider any issues identified in the most current TWDB Water Loss Audit Report, including leak detection and supply side analysis.
5. Solicit current water planning information, including specific water management strategies of interest from WUGs and WWPs with identified needs.
6. Review and consider the most recent Water Supply Management, Water Conservation, and/or Drought Contingency Plans, where available, from WUGs and WWPs with identified needs.
7. Consider potentially feasible water management strategies that may include, but are not limited to (Chapter 357 Subchapter C §357.34):

- Extended use of existing supplies including:
    i. System optimization and conjunctive use of water resources
    ii. Reallocation of reservoir storage to new uses
    iii. Voluntary redistribution of water resources including contracts, water marketing,

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regional water banks, sales, leases, options, subordination agreements, and financing agreements
   iv. Subordination of existing water rights through voluntary agreements
   v. Enhancement of yields of existing sources
   vi. Improvement of water quality including control of naturally occurring chlorides
   vii. Drought management

- New supply development including:
   i. Construction and improvement of surface water and groundwater resources
   ii. Brush control
   iii. Precipitation enhancement
   iv. Desalination
   v. Water supply that could be made available by cancellation of water rights
   vi. Rainwater harvesting
   vii. Aquifer storage and recovery
- Conservation and drought management measures including demand management
- Reuse of wastewater
- Interbasin transfers of surface water
- Emergency transfers of surface water

8. Consider other *potentially feasible water management strategies* suggested by planning group members, stakeholders, and the public.
9. Based on the above reviews and considerations, establish a preliminary list of *potentially feasible water management strategies*. At a discussion level, consider the following feasibility concerns for each strategy:

- Water supply source availability during drought-of-record conditions
- Cost/benefit
- Water quality
- Threats to agriculture and natural resources
- Impacts to the environment, other water resources, and basin transfers
  Socio-economic impacts

10. Based on the above discussion level analysis, select a final list of potentially feasible water management strategies for further technical evaluation using detailed analysis criteria.

Presented in Appendix K is the required tabular list of the potentially feasible WMSs identified by the PWPG for further analysis to date.

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Identification of Infeasible Water Management Strategies and Water Management Strategy Projects from 2021 RWP

In accordance with Texas Water Code §16.053(h)(10), the PWPG performed an evaluation to determine if WMSs and/or WMSPs recommended in the 2021 Plateau Water Plan are infeasible. The PWPG met on October 26, 2023, to develop a list of infeasible WMSs and WMSPs from the 2021 Plateau Water Plan. No WMSs or WMSPs from the 2021 Plateau Water Plan have been identified as infeasible. The PWPG approved this finding at its regular meeting on January 11, 2024.

Information collected regarding potentially infeasible strategies has been collected into the required TWDB spreadsheet format and is included as a digital deliverable in Appendix L.

Summary of Interregional Coordination

At each regular meeting of the PWPG updates from other regional water planning groups are communicated via members of the PWPG appointed as liaisons for Region K, L and F. The Chair of the PWPG participates in both the regular RWPG Chairs Conference calls and is a representative of the PWPG that serves on the Interregional Planning Council.

Additionally, throughout the development of the 2026 Plateau Water Plan, the technical consultant for the PWPG has coordinated with the technical consultants for these RWPGs. This has included coordination on the identification and engagement with Water User Groups (WUGs), consistency in the development of recommended revisions to population and water demand projections, source availability determinations, supply allocation, responsibilities relating to data entry, and continued consistency in all reporting elements.

Summary of Public Comments

Following a 14-day public notice period, the Chairman of the Plateau Water Planning Group at a Planning Group public meeting on April 25, 2024 in Kerrville Texas called for public comments on the proposed Plateau Region Technical Memorandum. No comments were presented by the public in attendance. Also, no written comments from the public were received prior to the meeting. Following the public Planning Group meeting, an additional 8-day period was observed to receive public comments. At the close of this period no further public comments were received.

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Appendix A. TWDB DB27 Report – 2026 RWP WUG Population

DRAFT Region J Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Bandera County Total	**21,515**	**21,948**	**22,390**	**22,843**	**23,300**	**23,760**
Bandera County / Guadalupe Basin Total	**111**	**113**	**115**	**118**	**120**	**123**
County-Other	111	113	115	118	120	123
Bandera County / Nueces Basin Total	**1,041**	**1,062**	**1,083**	**1,105**	**1,127**	**1,150**
County-Other	1,041	1,062	1,083	1,105	1,127	1,150
Bandera County / San Antonio Basin Total	**20,363**	**20,773**	**21,192**	**21,620**	**22,053**	**22,487**
Bandera	1,949	1,988	2,028	2,069	2,111	2,152
Bandera County FWSD 1	1,074	1,095	1,117	1,140	1,163	1,186
County-Other	17,340	17,690	18,047	18,411	18,779	19,149
Edwards County Total	**1,167**	**934**	**748**	**637**	**525**	**412**
Edwards County / Colorado Basin Total	**543**	**435**	**348**	**296**	**244**	**192**
Rocksprings	416	333	267	227	187	147
County-Other	127	102	81	69	57	45
Edwards County / Nueces Basin Total	**563**	**450**	**361**	**308**	**254**	**199**
Rocksprings	250	200	160	137	113	88
County-Other	313	250	201	171	141	111
Edwards County / Rio Grande Basin Total	**61**	**49**	**39**	**33**	**27**	**21**
County-Other	61	49	39	33	27	21
Kerr County Total	**57,139**	**59,752**	**61,594**	**64,542**	**67,514**	**70,356**
Kerr County / Colorado Basin Total	**590**	**617**	**636**	**667**	**698**	**727**
County-Other	590	617	636	667	698	727
Kerr County / Guadalupe Basin Total	**56,305**	**58,879**	**60,695**	**63,600**	**66,527**	**69,329**
Kerrville	33,038	34,549	35,614	37,318	39,037	40,680
Kerrville South Water	3,600	3,764	3,880	4,066	4,253	4,432
County-Other	19,667	20,566	21,201	22,216	23,237	24,217
Kerr County / Nueces Basin Total	**8**	**9**	**9**	**9**	**10**	**10**
County-Other	8	9	9	9	10	10
Kerr County / San Antonio Basin Total	**236**	**247**	**254**	**266**	**279**	**290**
County-Other	236	247	254	266	279	290

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

DRAFT Region J Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Kinney County Total	**2,951**	**2,794**	**2,693**	**2,630**	**2,568**	**2,504**
Kinney County / Nueces Basin Total	**21**	**20**	**19**	**19**	**19**	**18**
County-Other	21	20	19	19	19	18
Kinney County / Rio Grande Basin Total	**2,930**	**2,774**	**2,674**	**2,611**	**2,549**	**2,486**
Brackettville	1,077	1,020	983	960	937	914
Fort Clark MUD	1,372	1,299	1,252	1,223	1,194	1,164
County-Other	481	455	439	428	418	408
Real County Total	**2,485**	**2,114**	**1,804**	**1,569**	**1,330**	**1,091**
Real County / Colorado Basin Total	**31**	**26**	**22**	**19**	**16**	**14**
County-Other	31	26	22	19	16	14
Real County / Nueces Basin Total	**2,454**	**2,088**	**1,782**	**1,550**	**1,314**	**1,077**
Camp Wood	339	288	246	214	181	149
Leakey	210	179	153	133	113	92
County-Other	1,905	1,621	1,383	1,203	1,020	836
Val Verde County Total	**55,211**	**55,573**	**55,889**	**56,060**	**56,233**	**56,407**
Val Verde County / Rio Grande Basin Total	**55,211**	**55,573**	**55,889**	**56,060**	**56,233**	**56,407**
Del Rio Utilities Commission	35,932	36,018	36,105	36,191	36,278	36,365
Laughlin Air Force Base	1,640	1,640	1,640	1,640	1,640	1,640
County-Other	17,639	17,915	18,144	18,229	18,315	18,402
Region J Population Total	**140,468**	**143,115**	**145,118**	**148,281**	**151,470**	**154,530**

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

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Appendix B. TWDB DB27 Report – WUG Demand

DRAFT Region J Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Bandera County Total	**4,627**	**4,669**	**4,725**	**4,782**	**4,838**	**4,896**
Bandera County / Guadalupe Basin Total	**13**	**13**	**14**	**14**	**14**	**14**
County-Other	12	12	13	13	13	13
Livestock	1	1	1	1	1	1
Bandera County / Nueces Basin Total	**503**	**505**	**507**	**510**	**512**	**514**
County-Other	113	115	117	120	122	124
Mining	1	1	1	1	1	1
Livestock	64	64	64	64	64	64
Irrigation	325	325	325	325	325	325
Bandera County / San Antonio Basin Total	**4,111**	**4,151**	**4,204**	**4,258**	**4,312**	**4,368**
Bandera	347	353	360	367	374	382
Bandera County FWSD 1	342	348	355	363	370	377
County-Other	1,888	1,916	1,954	1,993	2,033	2,074
Mining	1	1	2	2	2	2
Livestock	232	232	232	232	232	232
Irrigation	1,301	1,301	1,301	1,301	1,301	1,301
Edwards County Total	**1,037**	**990**	**953**	**930**	**909**	**886**
Edwards County / Colorado Basin Total	**289**	**264**	**244**	**232**	**221**	**209**
Rocksprings	109	87	70	59	49	39
County-Other	15	12	9	8	7	5
Livestock	62	62	62	62	62	62
Irrigation	103	103	103	103	103	103
Edwards County / Nueces Basin Total	**498**	**477**	**462**	**451**	**442**	**432**
Rocksprings	66	53	42	36	30	23
County-Other	36	28	24	19	16	13
Mining	12	12	12	12	12	12
Livestock	256	256	256	256	256	256
Irrigation	128	128	128	128	128	128
Edwards County / Rio Grande Basin Total	**250**	**249**	**247**	**247**	**246**	**245**
County-Other	7	6	4	4	3	2
Livestock	156	156	156	156	156	156
Irrigation	87	87	87	87	87	87

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

DRAFT Region J Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Kerr County Total	**14,776**	**15,268**	**15,644**	**16,242**	**16,847**	**17,425**
Kerr County / Colorado Basin Total	**221**	**225**	**228**	**233**	**238**	**243**
County-Other	96	100	103	108	113	118
Livestock	28	28	28	28	28	28
Irrigation	97	97	97	97	97	97
Kerr County / Guadalupe Basin Total	**14,404**	**14,890**	**15,262**	**15,852**	**16,450**	**17,021**
Kerrville	7,839	8,174	8,426	8,829	9,236	9,625
Kerrville South Water	457	475	490	513	537	560
County-Other	3,200	3,332	3,436	3,599	3,765	3,923
Manufacturing	27	28	29	30	31	32
Mining	201	201	201	201	201	201
Livestock	815	815	815	815	815	815
Irrigation	1,865	1,865	1,865	1,865	1,865	1,865
Kerr County / Nueces Basin Total	**4**	**4**	**4**	**5**	**5**	**5**
County-Other	1	1	1	2	2	2
Livestock	3	3	3	3	3	3
Kerr County / San Antonio Basin Total	**147**	**149**	**150**	**152**	**154**	**156**
County-Other	38	40	41	43	45	47
Livestock	43	43	43	43	43	43
Irrigation	66	66	66	66	66	66
Kinney County Total	**8,299**	**8,227**	**8,182**	**8,153**	**8,126**	**8,097**
Kinney County / Nueces Basin Total	**2,409**	**2,409**	**2,409**	**2,409**	**2,409**	**2,408**
County-Other	3	3	3	3	3	2
Livestock	49	49	49	49	49	49
Irrigation	2,357	2,357	2,357	2,357	2,357	2,357
Kinney County / Rio Grande Basin Total	**5,890**	**5,818**	**5,773**	**5,744**	**5,717**	**5,689**
Brackettville	528	499	481	470	459	447
Fort Clark MUD	727	688	663	647	632	616
County-Other	65	61	59	57	56	56
Livestock	193	193	193	193	193	193
Irrigation	4,377	4,377	4,377	4,377	4,377	4,377

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

DRAFT Region J Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Real County Total	**1,091**	**1,013**	**951**	**903**	**856**	**807**
Real County / Colorado Basin Total	**20**	**20**	**19**	**19**	**19**	**18**
County-Other	3	3	2	2	2	1
Irrigation	17	17	17	17	17	17
Real County / Nueces Basin Total	**1,071**	**993**	**932**	**884**	**837**	**789**
Camp Wood	147	124	106	92	78	64
Leakey	143	121	104	90	77	62
County-Other	210	177	151	131	111	92
Manufacturing	2	2	2	2	2	2
Livestock	261	261	261	261	261	261
Irrigation	308	308	308	308	308	308
Val Verde County Total	**21,150**	**21,188**	**21,260**	**21,310**	**21,360**	**21,411**
Val Verde County / Rio Grande Basin Total	**21,150**	**21,188**	**21,260**	**21,310**	**21,360**	**21,411**
Del Rio Utilities Commission	12,977	12,985	13,017	13,048	13,079	13,110
Laughlin Air Force Base	969	967	967	967	967	967
County-Other	2,400	2,424	2,455	2,466	2,478	2,490
Manufacturing	8	8	8	8	8	8
Mining	97	105	114	122	129	137
Livestock	492	492	492	492	492	492
Irrigation	4,207	4,207	4,207	4,207	4,207	4,207
Region J Demand Total	**50,980**	**51,355**	**51,715**	**52,320**	**52,936**	**53,522**

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

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Appendix C.TWDB DB27 Report – Source Availability

DRAFT Region J Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Groundwater Source Availability Total				**175,929**	**175,640**	**175,323**	**175,307**	**175,307**	**175,307**
Austin Chalk Aquifer	Kinney	Nueces	Brackish	875	875	875	875	875	875
Austin Chalk Aquifer	Kinney	Rio Grande	Brackish	1,894	1,894	1,894	1,894	1,894	1,894
Edwards-BFZ Aquifer	Kinney	Nueces	Fresh	6,319	6,319	6,319	6,319	6,319	6,319
Edwards-BFZ Aquifer	Kinney	Rio Grande	Fresh	2	2	2	2	2	2
Edwards-Trinity-Plateau Aquifer	Bandera	Guadalupe	Fresh	81	81	81	81	81	81
Edwards-Trinity-Plateau Aquifer	Bandera	Nueces	Fresh	38	38	38	38	38	38
Edwards-Trinity-Plateau Aquifer	Bandera	San Antonio	Fresh	1,890	1,890	1,890	1,890	1,890	1,890
Edwards-Trinity-Plateau Aquifer	Kerr	Colorado	Fresh	17	17	17	17	17	17
Edwards-Trinity-Plateau Aquifer	Kerr	Guadalupe	Fresh	962	962	962	962	962	962
Edwards-Trinity-Plateau Aquifer	Kerr	Nueces	Fresh	5	5	5	5	5	5
Edwards-Trinity-Plateau Aquifer	Kerr	San Antonio	Fresh	3	3	3	3	3	3
Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers	Edwards	Colorado	Fresh	2,305	2,305	2,305	2,305	2,305	2,305
Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers	Edwards	Nueces	Fresh	1,631	1,631	1,631	1,631	1,631	1,631
Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers	Edwards	Rio Grande	Fresh	1,740	1,740	1,740	1,740	1,740	1,740
Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers	Kinney	Nueces	Fresh	12	12	12	12	12	12
Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers	Kinney	Rio Grande	Fresh	70,329	70,329	70,329	70,329	70,329	70,329
Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers	Real	Colorado	Fresh	277	277	277	277	277	277

* 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 J Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers	Real	Guadalupe	Fresh	3	3	3	3	3	3
Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers	Real	Nueces	Fresh	7,243	7,243	7,243	7,243	7,243	7,243
Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers	Val Verde	Rio Grande	Fresh	50,000	50,000	50,000	50,000	50,000	50,000
Ellenburger-San Saba Aquifer	Kerr	Colorado	Fresh	200	200	200	200	200	200
Ellenburger-San Saba Aquifer	Kerr	Guadalupe	Fresh	1,802	1,802	1,802	1,802	1,802	1,802
Frio River Alluvium Aquifer	Real	Nueces	Fresh	2,145	2,145	2,145	2,145	2,145	2,145
Hickory Aquifer	Kerr	Colorado	Fresh	0	0	0	0	0	0
Hickory Aquifer	Kerr	Guadalupe	Fresh	0	0	0	0	0	0
Nueces River Alluvium Aquifer	Edwards	Nueces	Fresh	1,787	1,787	1,787	1,787	1,787	1,787
Nueces River Alluvium Aquifer	Real	Nueces	Fresh	1,787	1,787	1,787	1,787	1,787	1,787
Trinity Aquifer	Bandera	Guadalupe	Fresh	76	76	76	76	76	76
Trinity Aquifer	Bandera	Nueces	Fresh/ Brackish	903	903	903	903	903	903
Trinity Aquifer	Bandera	San Antonio	Fresh/ Brackish	6,305	6,305	6,305	6,305	6,305	6,305
Trinity Aquifer	Kerr	Colorado	Fresh	318	318	318	318	318	318
Trinity Aquifer	Kerr	Guadalupe	Fresh/ Brackish	14,056	13,767	13,450	13,434	13,434	13,434
Trinity Aquifer	Kerr	Nueces	Fresh	0	0	0	0	0	0
Trinity Aquifer	Kerr	San Antonio	Fresh	471	471	471	471	471	471
Trinity Aquifer ASR	Kerr	Guadalupe	Fresh	453	453	453	453	453	453
Reuse Source Availability Total				**5,000**	**5,000**	**5,000**	**5,000**	**5,000**	**5,000**

* 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 J Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Direct Reuse	Kerr	Guadalupe	Fresh	5,000	5,000	5,000	5,000	5,000	5,000
Surface Water Source Availability Total				**18,898**	**18,898**	**18,898**	**18,898**	**18,898**	**18,898**
Colorado Livestock Local Supply	Real	Colorado	Fresh	2	2	2	2	2	2
Colorado Run-of-River	Edwards	Colorado	Fresh	25	25	25	25	25	25
Guadalupe Livestock Local Supply	Kerr	Guadalupe	Fresh	457	457	457	457	457	457
Guadalupe Run-of-River	Bandera	Guadalupe	Fresh	3	3	3	3	3	3
Guadalupe Run-of-River	Kerr	Guadalupe	Fresh	1,502	1,502	1,502	1,502	1,502	1,502
Medina Lake/Reservoir	Reservoir**	San Antonio	Fresh	0	0	0	0	0	0
Nueces Livestock Local Supply	Real	Nueces	Fresh	50	50	50	50	50	50
Nueces Run-of-River	Bandera	Nueces	Fresh	13	13	13	13	13	13
Nueces Run-of-River	Edwards	Nueces	Fresh	94	94	94	94	94	94
Nueces Run-of-River	Real	Nueces	Fresh	1,752	1,752	1,752	1,752	1,752	1,752
Rio Grande Livestock Local Supply	Edwards	Rio Grande	Fresh	77	77	77	77	77	77
Rio Grande Livestock Local Supply	Kinney	Rio Grande	Fresh	49	49	49	49	49	49
Rio Grande Livestock Local Supply	Val Verde	Rio Grande	Fresh	25	25	25	25	25	25
Rio Grande Run-of-River	Kinney	Rio Grande	Fresh	1,035	1,035	1,035	1,035	1,035	1,035
Rio Grande Run-of-River	Val Verde	Rio Grande	Fresh	13,739	13,739	13,739	13,739	13,739	13,739
San Antonio Livestock Local Supply	Bandera	San Antonio	Fresh	73	73	73	73	73	73
San Antonio Run-of-River	Bandera	San Antonio	Fresh	2	2	2	2	2	2
Region J Source Availability Total				**199,827**	**199,538**	**199,221**	**199,205**	**199,205**	**199,205**

* 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.

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Appendix D.TWDB DB27 Report – WUG Existing Water Supply

DRAFT Region J 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
Bandera County WUG Total			**7,579**	**7,579**	**7,579**	**7,579**	**7,579**	**7,579**
Bandera County / Guadalupe Basin WUG Total			**40**	**40**	**40**	**40**	**40**	**40**
County-Other	J	Edwards-Trinity-Plateau Aquifer | Bandera County	31	31	31	31	31	31
Livestock	J	Edwards-Trinity-Plateau Aquifer | Bandera County	9	9	9	9	9	9
Bandera County / Nueces Basin WUG Total			**672**	**672**	**672**	**672**	**672**	**672**
County-Other	J	Edwards-Trinity-Plateau Aquifer | Bandera County	38	38	38	38	38	38
County-Other	J	Nueces Run-of-River	0	0	0	0	0	0
County-Other	J	Trinity Aquifer | Bandera County	251	251	251	251	251	251
Mining	J	Trinity Aquifer | Bandera County	0	0	0	0	0	0
Livestock	J	Edwards-Trinity-Plateau Aquifer | Bandera County	0	0	0	0	0	0
Livestock	J	Trinity Aquifer | Bandera County	44	44	44	44	44	44
Irrigation	J	Nueces Run-of-River	13	13	13	13	13	13
Irrigation	J	Trinity Aquifer | Bandera County	326	326	326	326	326	326
Bandera County / San Antonio Basin WUG Total			**6,867**	**6,867**	**6,867**	**6,867**	**6,867**	**6,867**
Bandera	J	Trinity Aquifer | Bandera County	496	496	496	496	496	496
Bandera County FWSD 1	J	Trinity Aquifer | Bandera County	439	439	439	439	439	439
County-Other	J	Edwards-Trinity-Plateau Aquifer | Bandera County	388	388	388	388	388	388
County-Other	J	San Antonio Run-of-River	0	0	0	0	0	0
County-Other	J	Trinity Aquifer | Bandera County	4,467	4,467	4,467	4,467	4,467	4,467
Mining	J	Edwards-Trinity-Plateau Aquifer | Bandera County	0	0	0	0	0	0
Livestock	J	Edwards-Trinity-Plateau Aquifer | Bandera County	96	96	96	96	96	96
Livestock	J	Local Surface Water Supply	73	73	73	73	73	73

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

DRAFT Region J 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	J	Trinity Aquifer | Bandera County	74	74	74	74	74	74
Irrigation	J	Guadalupe Run-of-River	3	3	3	3	3	3
Irrigation	J	San Antonio Run-of-River	2	2	2	2	2	2
Irrigation	J	Trinity Aquifer | Bandera County	829	829	829	829	829	829
Edwards County WUG Total			**1,842**	**1,842**	**1,842**	**1,842**	**1,842**	**1,842**
Edwards County / Colorado Basin WUG Total			**1,060**	**1,060**	**1,060**	**1,060**	**1,060**	**1,060**
Rocksprings	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Edwards County	806	806	806	806	806	806
County-Other	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Edwards County	36	36	36	36	36	36
Livestock	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Edwards County	115	115	115	115	115	115
Irrigation	J	Colorado Run-of-River	25	25	25	25	25	25
Irrigation	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Edwards County	78	78	78	78	78	78
Edwards County / Nueces Basin WUG Total			**503**	**503**	**503**	**503**	**503**	**503**
Rocksprings		No water supply associated with WUG	0	0	0	0	0	0
County-Other	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Edwards County	83	83	83	83	83	83
County-Other	J	Nueces River Alluvium Aquifer | Edwards County	4	4	4	4	4	4
Mining	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Edwards County	10	10	10	10	10	10
Livestock	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Edwards County	203	203	203	203	203	203
Irrigation	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Edwards County	109	109	109	109	109	109
Irrigation	J	Nueces Run-of-River	94	94	94	94	94	94

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DRAFT Region J 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
Edwards County / Rio Grande Basin WUG Total			**279**	**279**	**279**	**279**	**279**	**279**
County-Other	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Edwards County	17	17	17	17	17	17
Livestock	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Edwards County	113	113	113	113	113	113
Livestock	J	Local Surface Water Supply	77	77	77	77	77	77
Irrigation	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Edwards County	72	72	72	72	72	72
Kerr County WUG Total			**15,969**	**15,969**	**15,958**	**15,942**	**15,942**	**15,942**
Kerr County / Colorado Basin WUG Total			**17**	**17**	**17**	**17**	**17**	**17**
County-Other	J	Edwards-Trinity-Plateau Aquifer | Kerr County	17	17	17	17	17	17
Livestock	J	Edwards-Trinity-Plateau Aquifer | Kerr County	0	0	0	0	0	0
Irrigation	J	Edwards-Trinity-Plateau Aquifer | Kerr County	0	0	0	0	0	0
Kerr County / Guadalupe Basin WUG Total			**15,816**	**15,816**	**15,805**	**15,789**	**15,789**	**15,789**
Kerrville	J	Direct Reuse	2,425	2,425	2,425	2,425	2,425	2,425
Kerrville	J	Guadalupe Run-of-River	150	150	150	150	150	150
Kerrville	J	Trinity Aquifer | Kerr County	3,277	3,277	3,277	3,277	3,277	3,277
Kerrville	J	Trinity Aquifer ASR | Kerr County	453	453	453	453	453	453
Kerrville South Water	J	Trinity Aquifer | Kerr County	387	387	387	387	387	387
County-Other	J	Edwards-Trinity-Plateau Aquifer | Kerr County	397	397	397	397	397	397
County-Other	J	Guadalupe Run-of-River	16	16	16	16	16	16
County-Other	J	Trinity Aquifer | Kerr County	5,111	5,111	5,111	5,111	5,111	5,111
Manufacturing	J	Edwards-Trinity-Plateau Aquifer | Kerr County	20	20	20	20	20	20
Manufacturing	J	Guadalupe Run-of-River	77	77	77	77	77	77
Manufacturing	J	Trinity Aquifer | Kerr County	0	0	0	0	0	0

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DRAFT Region J 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	J	Edwards-Trinity-Plateau Aquifer | Kerr County	0	0	0	0	0	0
Mining	J	Guadalupe Run-of-River	72	72	72	72	72	72
Mining	J	Trinity Aquifer | Kerr County	54	54	54	54	54	54
Livestock	J	Edwards-Trinity-Plateau Aquifer | Kerr County	230	230	230	230	230	230
Livestock	J	Local Surface Water Supply	457	457	457	457	457	457
Livestock	J	Trinity Aquifer | Kerr County	143	143	143	143	143	143
Irrigation	J	Guadalupe Run-of-River	1,187	1,187	1,187	1,187	1,187	1,187
Irrigation	J	Trinity Aquifer | Kerr County	1,360	1,360	1,349	1,333	1,333	1,333
Kerr County / Nueces Basin WUG Total			**5**	**5**	**5**	**5**	**5**	**5**
County-Other	J	Edwards-Trinity-Plateau Aquifer | Kerr County	2	2	2	2	2	2
Livestock	J	Edwards-Trinity-Plateau Aquifer | Kerr County	3	3	3	3	3	3
Kerr County / San Antonio Basin WUG Total			**131**	**131**	**131**	**131**	**131**	**131**
County-Other	J	Edwards-Trinity-Plateau Aquifer | Kerr County	1	1	1	1	1	1
County-Other	J	Trinity Aquifer | Kerr County	65	65	65	65	65	65
Livestock	J	Edwards-Trinity-Plateau Aquifer | Kerr County	2	2	2	2	2	2
Irrigation	J	Edwards-Trinity-Plateau Aquifer | Kerr County	0	0	0	0	0	0
Irrigation	J	Trinity Aquifer | Kerr County	63	63	63	63	63	63
Kinney County WUG Total			**10,205**	**10,205**	**10,205**	**10,205**	**10,205**	**10,205**
Kinney County / Nueces Basin WUG Total			**2,440**	**2,440**	**2,440**	**2,440**	**2,440**	**2,440**
County-Other	J	Edwards-BFZ Aquifer | Kinney County	5	5	5	5	5	5
County-Other	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Kinney County	1	1	1	1	1	1

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DRAFT Region J 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	J	Edwards-BFZ Aquifer | Kinney County	66	66	66	66	66	66
Livestock	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Kinney County	11	11	11	11	11	11
Irrigation	J	Edwards-BFZ Aquifer | Kinney County	2,357	2,357	2,357	2,357	2,357	2,357
Kinney County / Rio Grande Basin WUG Total			**7,765**	**7,765**	**7,765**	**7,765**	**7,765**	**7,765**
Brackettville	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Kinney County	645	645	645	645	645	645
Brackettville	J	Rio Grande Run-of-River	0	0	0	0	0	0
Fort Clark MUD	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Kinney County	1,371	1,371	1,371	1,371	1,371	1,371
County-Other	J	Austin Chalk Aquifer | Kinney County	65	65	65	65	65	65
County-Other	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Kinney County	69	69	69	69	69	69
Livestock	J	Austin Chalk Aquifer | Kinney County	108	108	108	108	108	108
Livestock	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Kinney County	46	46	46	46	46	46
Livestock	J	Local Surface Water Supply	49	49	49	49	49	49
Irrigation	J	Austin Chalk Aquifer | Kinney County	952	952	952	952	952	952
Irrigation	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Kinney County	3,425	3,425	3,425	3,425	3,425	3,425
Irrigation	J	Rio Grande Run-of-River	1,035	1,035	1,035	1,035	1,035	1,035
Real County WUG Total			**3,320**	**3,320**	**3,320**	**3,320**	**3,320**	**3,320**
Real County / Colorado Basin WUG Total			**29**	**29**	**29**	**29**	**29**	**29**
County-Other	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Real County	9	9	9	9	9	9

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DRAFT Region J 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
Irrigation	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Real County	20	20	20	20	20	20
Real County / Nueces Basin WUG Total			**3,291**	**3,291**	**3,291**	**3,291**	**3,291**	**3,291**
Camp Wood	J	Nueces Run-of-River	0	0	0	0	0	0
Leakey	J	Frio River Alluvium Aquifer | Real County	577	577	577	577	577	577
County-Other	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Real County	176	176	176	176	176	176
County-Other	J	Frio River Alluvium Aquifer | Real County	352	352	352	352	352	352
County-Other	J	Nueces River Alluvium Aquifer | Real County	1	1	1	1	1	1
County-Other	J	Nueces Run-of-River	0	0	0	0	0	0
Manufacturing	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Real County	0	0	0	0	0	0
Livestock	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Real County	191	191	191	191	191	191
Livestock	J	Local Surface Water Supply	50	50	50	50	50	50
Irrigation	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Real County	192	192	192	192	192	192
Irrigation	J	Nueces Run-of-River	1,752	1,752	1,752	1,752	1,752	1,752
Val Verde County WUG Total			**17,078**	**17,078**	**17,078**	**17,078**	**17,078**	**17,078**
Val Verde County / Rio Grande Basin WUG Total			**17,078**	**17,078**	**17,078**	**17,078**	**17,078**	**17,078**
Del Rio Utilities Commission	J	Rio Grande Run-of-River	6,135	6,135	6,135	6,135	6,135	6,135
Laughlin Air Force Base	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Val Verde County	60	60	60	60	60	60
Laughlin Air Force Base	J	Rio Grande Run-of-River	871	871	871	871	871	871

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DRAFT Region J 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	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Val Verde County	2,632	2,632	2,632	2,632	2,632	2,632
County-Other	J	Rio Grande Run-of-River	360	360	360	360	360	360
Manufacturing	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Val Verde County	8	8	8	8	8	8
Mining	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Val Verde County	99	99	99	99	99	99
Livestock	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Val Verde County	467	467	467	467	467	467
Livestock	J	Local Surface Water Supply	25	25	25	25	25	25
Irrigation	J	Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers | Val Verde County	143	143	143	143	143	143
Irrigation	J	Rio Grande Run-of-River	6,278	6,278	6,278	6,278	6,278	6,278
Region J WUG Existing Water Supply Total			**55,993**	**55,993**	**55,982**	**55,966**	**55,966**	**55,966**

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

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Appendix E. TWDB DB27 Report – WUG Needs/Surplus

DRAFT Region J 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**
County-Other	Bandera	Guadalupe	19	19	18	18	18	18
Livestock	Bandera	Guadalupe	8	8	8	8	8	8
County-Other	Bandera	Nueces	176	174	172	169	167	165
Mining	Bandera	Nueces	(1)	(1)	(1)	(1)	(1)	(1)
Livestock	Bandera	Nueces	(20)	(20)	(20)	(20)	(20)	(20)
Irrigation	Bandera	Nueces	14	14	14	14	14	14
Bandera	Bandera	San Antonio	149	143	136	129	122	114
Bandera County FWSD 1	Bandera	San Antonio	97	91	84	76	69	62
County-Other	Bandera	San Antonio	2,967	2,939	2,901	2,862	2,822	2,781
Mining	Bandera	San Antonio	(1)	(1)	(2)	(2)	(2)	(2)
Livestock	Bandera	San Antonio	11	11	11	11	11	11
Irrigation	Bandera	San Antonio	(467)	(467)	(467)	(467)	(467)	(467)
Rocksprings	Edwards	Colorado	697	719	736	747	757	767
County-Other	Edwards	Colorado	21	24	27	28	29	31
Livestock	Edwards	Colorado	53	53	53	53	53	53
Irrigation	Edwards	Colorado	0	0	0	0	0	0
Rocksprings	Edwards	Nueces	(66)	(53)	(42)	(36)	(30)	(23)
County-Other	Edwards	Nueces	51	59	63	68	71	74
Mining	Edwards	Nueces	(2)	(2)	(2)	(2)	(2)	(2)
Livestock	Edwards	Nueces	(53)	(53)	(53)	(53)	(53)	(53)
Irrigation	Edwards	Nueces	75	75	75	75	75	75
County-Other	Edwards	Rio Grande	10	11	13	13	14	15
Livestock	Edwards	Rio Grande	34	34	34	34	34	34
Irrigation	Edwards	Rio Grande	(15)	(15)	(15)	(15)	(15)	(15)
County-Other	Kerr	Colorado	(79)	(83)	(86)	(91)	(96)	(101)
Livestock	Kerr	Colorado	(28)	(28)	(28)	(28)	(28)	(28)
Irrigation	Kerr	Colorado	(97)	(97)	(97)	(97)	(97)	(97)
Kerrville	Kerr	Guadalupe	(1,534)	(1,869)	(2,121)	(2,524)	(2,931)	(3,320)
Kerrville South Water	Kerr	Guadalupe	(70)	(88)	(103)	(126)	(150)	(173)
County-Other	Kerr	Guadalupe	2,324	2,192	2,088	1,925	1,759	1,601
Manufacturing	Kerr	Guadalupe	70	69	68	67	66	65
Mining	Kerr	Guadalupe	(75)	(75)	(75)	(75)	(75)	(75)

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

DRAFT Region J 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**
Livestock	Kerr	Guadalupe	15	15	15	15	15	15
Irrigation	Kerr	Guadalupe	682	682	671	655	655	655
County-Other	Kerr	Nueces	1	1	1	0	0	0
Livestock	Kerr	Nueces	0	0	0	0	0	0
County-Other	Kerr	San Antonio	28	26	25	23	21	19
Livestock	Kerr	San Antonio	(41)	(41)	(41)	(41)	(41)	(41)
Irrigation	Kerr	San Antonio	(3)	(3)	(3)	(3)	(3)	(3)
County-Other	Kinney	Nueces	3	3	3	3	3	4
Livestock	Kinney	Nueces	28	28	28	28	28	28
Irrigation	Kinney	Nueces	0	0	0	0	0	0
Brackettville	Kinney	Rio Grande	117	146	164	175	186	198
Fort Clark MUD	Kinney	Rio Grande	644	683	708	724	739	755
County-Other	Kinney	Rio Grande	69	73	75	77	78	78
Livestock	Kinney	Rio Grande	10	10	10	10	10	10
Irrigation	Kinney	Rio Grande	1,035	1,035	1,035	1,035	1,035	1,035
County-Other	Real	Colorado	6	6	7	7	7	8
Irrigation	Real	Colorado	3	3	3	3	3	3
Camp Wood	Real	Nueces	(147)	(124)	(106)	(92)	(78)	(64)
Leakey	Real	Nueces	434	456	473	487	500	515
County-Other	Real	Nueces	319	352	378	398	418	437
Manufacturing	Real	Nueces	(2)	(2)	(2)	(2)	(2)	(2)
Livestock	Real	Nueces	(20)	(20)	(20)	(20)	(20)	(20)
Irrigation	Real	Nueces	1,636	1,636	1,636	1,636	1,636	1,636
Del Rio Utilities Commission	Val Verde	Rio Grande	(6,842)	(6,850)	(6,882)	(6,913)	(6,944)	(6,975)
Laughlin Air Force Base	Val Verde	Rio Grande	(38)	(36)	(36)	(36)	(36)	(36)
County-Other	Val Verde	Rio Grande	592	568	537	526	514	502
Manufacturing	Val Verde	Rio Grande	0	0	0	0	0	0
Mining	Val Verde	Rio Grande	2	(6)	(15)	(23)	(30)	(38)
Livestock	Val Verde	Rio Grande	0	0	0	0	0	0
Irrigation	Val Verde	Rio Grande	2,214	2,214	2,214	2,214	2,214	2,214

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

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Appendix F. TWDB DB27 Report – WUG Data Comparison to 2021 RWP

DRAFT Region J 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 (%)
Bandera County| Municipal WUG Type						
Existing WUG supply total	5,997	6,110	1.9%	5,997	6,110	1.9%
Projected demand total	3,141	2,702	-14.0%	3,440	2,912	-15.3%
Water supply needs total**	393	0	-100.0%	455	0	-100.0%
Bandera County| Mining WUG Type						
Existing WUG supply total	0	0	0.0%	0	0	0.0%
Projected demand total	0	2	100.0%	0	3	100.0%
Water supply needs total**	0	2	100.0%	0	3	100.0%
Bandera County| Livestock WUG Type						
Existing WUG supply total	249	296	18.9%	249	296	18.9%
Projected demand total	243	297	22.2%	243	297	22.2%
Water supply needs total**	5	20	300.0%	5	20	300.0%
Bandera County| Irrigation WUG Type						
Existing WUG supply total	973	1,173	20.6%	973	1,173	20.6%
Projected demand total	946	1,626	71.9%	946	1,626	71.9%
Water supply needs total**	75	467	522.7%	75	467	522.7%
Edwards County| Municipal WUG Type						
Existing WUG supply total	1,231	946	-23.2%	1,231	946	-23.2%
Projected demand total	381	233	-38.8%	370	105	-71.6%
Water supply needs total**	96	66	-31.3%	94	30	-68.1%
Edwards County| Mining WUG Type						
Existing WUG supply total	30	10	-66.7%	30	10	-66.7%
Projected demand total	89	12	-86.5%	89	12	-86.5%
Water supply needs total**	59	2	-96.6%	59	2	-96.6%
Edwards County| Livestock WUG Type						
Existing WUG supply total	787	508	-35.5%	787	508	-35.5%

*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 J 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	397	474	19.4%	397	474	19.4%
Water supply needs total**	0	53	100.0%	0	53	100.0%
Edwards County| Irrigation WUG Type						
Existing WUG supply total	383	378	-1.3%	383	378	-1.3%
Projected demand total	215	318	47.9%	215	318	47.9%
Water supply needs total**	0	15	100.0%	0	15	100.0%
Kerr County| Municipal WUG Type						
Existing WUG supply total	15,883	12,301	-22.6%	15,883	12,301	-22.6%
Projected demand total	7,580	11,631	53.4%	7,926	13,698	72.8%
Water supply needs total**	6	1,683	27950.0%	10	3,177	31670.0%
Kerr County| Manufacturing WUG Type						
Existing WUG supply total	48	97	102.1%	48	97	102.1%
Projected demand total	21	27	28.6%	21	31	47.6%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Kerr County| Mining WUG Type						
Existing WUG supply total	125	126	0.8%	125	126	0.8%
Projected demand total	80	201	151.3%	120	201	67.5%
Water supply needs total**	12	75	525.0%	19	75	294.7%
Kerr County| Livestock WUG Type						
Existing WUG supply total	432	835	93.3%	432	835	93.3%
Projected demand total	757	889	17.4%	757	889	17.4%
Water supply needs total**	325	69	-78.8%	325	69	-78.8%
Kerr County| Irrigation WUG Type						
Existing WUG supply total	1,815	2,610	43.8%	1,815	2,583	42.3%
Projected demand total	1,342	2,028	51.1%	1,342	2,028	51.1%
Water supply needs total**	0	100	100.0%	0	100	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
**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 J 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 (%)
Kinney County| Municipal WUG Type						
Existing WUG supply total	2,215	2,156	-2.7%	2,215	2,156	-2.7%
Projected demand total	1,281	1,323	3.3%	1,262	1,150	-8.9%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Kinney County| Livestock WUG Type						
Existing WUG supply total	394	280	-28.9%	394	280	-28.9%
Projected demand total	224	242	8.0%	224	242	8.0%
Water supply needs total**	27	0	-100.0%	27	0	-100.0%
Kinney County| Irrigation WUG Type						
Existing WUG supply total	10,350	7,769	-24.9%	10,350	7,769	-24.9%
Projected demand total	3,713	6,734	81.4%	3,713	6,734	81.4%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Real County| Municipal WUG Type						
Existing WUG supply total	785	1,115	42.0%	785	1,115	42.0%
Projected demand total	445	503	13.0%	426	268	-37.1%
Water supply needs total**	139	147	5.8%	135	78	-42.2%
Real County| Manufacturing WUG Type						
Existing WUG supply total	0	0	0.0%	0	0	0.0%
Projected demand total	0	2	100.0%	0	2	100.0%
Water supply needs total**	0	2	100.0%	0	2	100.0%
Real County| Livestock WUG Type						
Existing WUG supply total	194	241	24.2%	194	241	24.2%
Projected demand total	151	261	72.8%	151	261	72.8%
Water supply needs total**	0	20	100.0%	0	20	100.0%
Real County| Irrigation WUG Type						
Existing WUG supply total	2,126	1,964	-7.6%	2,126	1,964	-7.6%

*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
**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 J 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	270	325	20.4%	270	325	20.4%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Val Verde County| Municipal WUG Type						
Existing WUG supply total	10,430	10,058	-3.6%	10,430	10,058	-3.6%
Projected demand total	14,474	16,346	12.9%	18,343	16,524	-9.9%
Water supply needs total**	5,101	6,880	34.9%	7,913	6,980	-11.8%
Val Verde County| Manufacturing WUG Type						
Existing WUG supply total	0	8	100.0%	0	8	100.0%
Projected demand total	0	8	100.0%	0	8	100.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Val Verde County| Mining WUG Type						
Existing WUG supply total	39	99	153.8%	39	99	153.8%
Projected demand total	249	97	-61.0%	171	129	-24.6%
Water supply needs total**	210	0	-100.0%	132	30	-77.3%
Val Verde County| Livestock WUG Type						
Existing WUG supply total	506	492	-2.8%	506	492	-2.8%
Projected demand total	410	492	20.0%	410	492	20.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Val Verde County| Irrigation WUG Type						
Existing WUG supply total	6,586	6,421	-2.5%	6,586	6,421	-2.5%
Projected demand total	2,319	4,207	81.4%	2,319	4,207	81.4%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Region J Total						
Existing WUG supply total	61,578	55,993	-9.1%	61,578	55,966	-9.1%
Projected demand total	38,728	50,980	31.6%	43,155	52,936	22.7%
Water supply needs total**	6,448	9,601	48.9%	9,249	11,121	20.2%

*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.

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Appendix G. TWDB DB27 Report – Source Data Comparison to 2021 RWP

DRAFT Region J 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 (%)
Bandera County						
Groundwater availability total	9,293	9,293	0.0%	9,293	9,293	0.0%
Surface Water availability total	10	91	810.0%	10	91	810.0%
Edwards County						
Groundwater availability total	7,463	7,463	0.0%	7,463	7,463	0.0%
Surface Water availability total	126	196	55.6%	126	196	55.6%
Kerr County						
Groundwater availability total	18,577	18,287	-1.6%	17,955	17,665	-1.6%
Reuse availability total	5,000	5,000	0.0%	5,000	5,000	0.0%
Surface Water availability total	1,375	1,959	42.5%	1,375	1,959	42.5%
Kinney County						
Groundwater availability total	79,431	79,431	0.0%	79,431	79,431	0.0%
Surface Water availability total	3,616	1,084	-70.0%	3,616	1,084	-70.0%
Real County						
Groundwater availability total	11,455	11,455	0.0%	11,455	11,455	0.0%
Surface Water availability total	1,751	1,804	3.0%	1,751	1,804	3.0%
Val Verde County						
Groundwater availability total	50,000	50,000	0.0%	50,000	50,000	0.0%
Surface Water availability total	13,776	13,764	-0.1%	13,776	13,764	-0.1%
Region J Total						
Groundwater availability total	176,219	175,929	-0.2%	175,597	175,307	-0.2%
Reuse availability total	5,000	5,000	0.0%	5,000	5,000	0.0%
Surface Water availability total	20,654	18,898	-8.5%	20,654	18,898	-8.5%

*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.

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Appendix H.1. Region J Hydrologic Variance Request

October 27, 2023

Mr. Lann Bookout
Region J Project Manager
Texas Water Development Board
P.O. Box 12321
Austin Texas

Subject: Hydrologic Variance Request for the Determination of Water Availability and Water Supplies for the 2026 Plateau Regional Water Plan (Region J)

Dear Mr. Bookout:

The Plateau Regional Water Planning Group (Region J) met on October 26, 2023, to discuss the process for determining the amount of surface water available from existing surface water sources and future water management strategies using the guidance provided by the Texas Water Development Board (TWDB) in the scope of work for the present cycle of Regional Water Planning. During this meeting, the RWPG discussed the approach for determining water availability within the region, noting where specific variances from the standard TWDB guidance will be employed towards development of the 2026 Plateau Regional Water Plan.

The RWPG approved submittal of this letter and the accompanying attachments, requesting that the TWDB allow the RWPG to use the approaches detailed herein throughout the regional planning process for analyses that determine surface water availability to existing rights and for analyses to determine the potential supplies available from new water management strategies and water management strategy projects.

Surface Water Supplies

In its guidelines for regional water planning, the TWDB requires that water availability be based on results derived from the official Texas Commission on Environmental Quality (TCEQ) Water Availability Models (WAMs). The TCEQ WAMs, which have been developed for all river basins in Texas, simulate the management and use of streamflow and reservoirs over a historical period of record, adhering to the prior appropriation doctrine, which governs the State of Texas water right priority system. The TCEQ WAMs are the fundamental tools used to determine surface water availability for water rights permitting and contain information about water rights in each respective river basin.

The Region J planning area includes the Rio Grande, Nueces, San Antonio, Colorado, and Guadalupe River Basins. For planning purposes, adjustments to these official WAMs are allowable to better reflect current and future surface water conditions in the Region. Such adjustments, as proposed herein, require the approval of the TWDB in order to be incorporated into the official TCEQ Rio Grande River Basin, Nueces River Basin, Colorado River Basin, and Guadalupe/San Antonio River Basin WAMs.

The TCEQ WAMs for these Plateau Region river basins contain information on all water rights in these basins. Embedded within the models are certain assumptions that the TCEQ specifies when analyzing water right reliabilities. Water supply availability under drought-of-record conditions is considered in the planning process to ensure that water demands can be met under critical conditions. For surface water supplies, drought-of-record

conditions relate to the quantity of water available to meet existing permits from the Rio Grande, Nueces, Colorado, Guadalupe, and San Antonio rivers and their tributaries as estimated by Run 3 of the official TCEQ WAMs.

There are several versions of each of these WAMs. TWDB guidance stipulates that regional water planning groups use the Full Authorization version that TCEQ employs to analyze applications for perpetual water rights. This scenario is often referred to as WAM "Run 3." The assumptions in the TCEQ WAM Run 3 are conservatively modeled for permitting purposes, allowing for consideration of water supply availability under drought-of-record conditions to ensure water demands can be met under critical circumstances.

For the purposes of the development of the 2026 Plateau Regional Water Plan, the "Run 3" WAMs for each of the aforementioned river basins will be updated to determine surface water availabilities in the region. To reflect the current and future conditions of the region, the following hydrologic variances are summarized below. Hydrologic variance request forms provided by the TWDB have been completed for each river basin, and are included in Attachment A. The methodology for estimating and modeling impacts of sedimentation on the surface water reservoirs are detailed in Attachment B.

Firm Yield

"Firm Yield" is defined in the Texas Administrative Code 31 TAC §357.10 (14) as the:

> "maximum amount of water that is physically and legally accessible from existing sources for immediate use by a Water User Group under a repeat of Drought of Record conditions."

In accordance with regional water planning rules and guidance, firm yields for existing reservoirs and water management strategies contemplating a reservoir within Region J will be reported within the 2026 Plateau Regional Water Plan based on the modeled results from the applicable WAM for the basin in which the reservoir is located.

Drought Worse than the Drought of Record

Per TWDB guidance, regional water plans must address water supply needs during a repeat of the drought of record. The generated values of supplies, demands, and population all have associated ranges of uncertainty. Although the limited regional planning resources may not support evaluating a range of or multiple scenarios and although assessments of the likelihood of droughts potentially worse than the drought of record (DWDOR) are not required, RWPGs may choose to consider scenarios and/or qualitatively address uncertainty and DWDOR in their region. Such assessments can be used to more explicitly recognize or acknowledge the relative uncertainties in the planning process and the potential risks without necessarily modifying the plan to mitigate those risks.

If evaluations performed by water providers within Region J include considerations of potential impacts of a DWDOR, these evaluations will be documented within Chapter 8 of the 2026 Plateau Regional Water Plan and considered for informing upon legislative and regional policy recommendations of the RWPG within that chapter.

General Hydrologic Assumptions

The Region J RWPG will assess surface water availability in a manner that accurately reflects water supplies that are available for use. The RWPG requests that the TWDB approve the following assumptions for use in representing existing supplies and potential future surface water supplies in the 2026 Plateau Regional Water Plan. The WAMs containing the necessary modifications to the TCEQ WAM that incorporate these assumptions will be referred to as the "Region J WAMs." A general summary of the models and assumptions to be employed for the evaluation of existing water supply and water management strategies (WMS's) is provided below.

Assumption	Use for Existing Supplies	Use for Water Management Strategies
General		
Use most recent available versions of the TCEQ WAMs.	X	X
WAM Run 3 - full consumption of existing water rights with no (zero) return flows).	X	X
Modeling of reuse to include consideration of minimum and permitted return flows associated with WUG, including identified return flows from TCEQ WAM Run 8.	X	X
Channel losses based on factors employed within official TCEQ WAMs.	X	X
ASR evaluations will consider surface water availability as determined by the WAM compared to demand, with the firm supply being the maximum demand that could be met assuming a repetition of the period of record drought.		X
Adopted environmental flow standards will be used as incorporated into the applicable official TCEQ WAMs	X	X
For those basins lacking TCEQ adopted environmental flow standards, TWDB consensus planning criteria will be employed in a manner consistent with TWDB guidelines.		X

Assumption	Use for Existing Supplies	Use for Water Management Strategies
Subordination of water rights will be modeled in a manner consistent with modeled subordination within the official TCEQ WAMs.	X	X
For municipal and industrial users: Run of the river rights will be determined in accordance with TWDB guidelines which state that the use-appropriate monthly percentage of the annual firm diversion must be satisfied in each and every month of the simulation period for all surface water diversions. Reservoirs will use firm yield unless a change is specifically requested by a reservoir owner and approved by the RWPG and TWDB, as appropriate per TWDB guidelines. The calculated source availabilities will be compared against existing legal and infrastructure constraints (water treatment plants, pipelines, intakes, etc.) and will be constrained if the existing infrastructure or legal capability is not sufficient to facilitate full utilization of the source. The most constrained amount will be used as the firm supply.	X	X
For irrigation users, water supply will be determined using firm reliability (100%). In the absence of any supply information or justification of reliable supplies available in a drought of record, supply values will be set equal to zero.	X	X
For livestock, in the absence of any supply information or justification of reliable supplies available in a drought of record, supply values will be set to zero.	X	X
Sedimentation		

Assumption	Use for Existing Supplies	Use for Water Management Strategies
For reservoirs with available volumetric survey information, an annual sediment rate will be calculated, and loadings calculated for Year 2030 and Year 2080. Sediment distribution will be calculated using the Empirical Area-Reduction method and resultant 2030 and 2080 area-capacity curves developed and employed within WAM. Intervening decadal yields will be linearly interpolated.	X	X
The most recent volumetric survey information will be utilized. For reservoirs lacking volumetric surveys, original area-capacity relations within TCEQ WAM Run 3 will be assumed constant.	X	X

Rio Grande River Basin (including the Pecos and Devils River)

Portions of the Rio Grande River Basin, including its tributaries, are located in Val Verde, Edwards, and Kinney Counties in the Plateau Region. The Pecos River forms a portion of the boundary between Terrell County in the Far West Texas Region and Crockett County in Region F before reaching Langtry in Val Verde County in the Plateau Region. The Devils River originates in Sutton County and proceeds generally southward through Val Verde County before reaching Amistad International Reservoir. There are no surface water rights on the Pecos and Devils Rivers within the Plateau Region. Amistad International Reservoir is located in the Rio Grande River Basin on the border between the United States and Mexico near the City of Del Rio, and was constructed jointly by the two nations. It was completed in 1968, with a maximum capacity of 5.25 million acre-feet, with approximately 3.5 million acre-feet of storage used for conservation. Lake Amistad is not a present source of supply for the Plateau Region, as the City of Del Rio and downstream irrigators in Val Verde County obtain their supply primarily from San Felipe Springs and Creek.

For the Rio Grande River Basin, the most recently available official TCEQ WAM Run 3 (ver. Oct. 1, 2023) will be employed for all availability analyses in the basin using the modeled hydrologic period of 1940-2018.

Nueces River Basin

Portions of the Nueces River Basin, including its tributaries, are located within Edwards, Kinney, Real, Kerr, and Bandera Counties within the Plateau Region, with the main stem Nueces forming a portion of the border between Real and Edwards Counties. Headwater tributaries of the Nueces River located in the Plateau Region include the Sabinal River and Hondo Creek in Bandera County, the West Nueces River in Edwards and Kinney Counties, and the Frio, East Frio, and Dry Frio Rivers in Real County.

For the Nueces River Basin, the most recently available official TCEQ WAM Run 3 (ver. Oct. 1, 2023) will be employed for all availability analyses in the basin using the modeled hydrologic period of 1934-1996.

Colorado River Basin

The headwaters of the South Llano River, a tributary of the Colorado River, lie within Edwards County, while other tributaries are within Kerr County and Real County. For the Colorado River Basin, the most recently available official TCEQ WAM Run 3 (ver. Oct. 1, 2023) will be employed for all availability analyses in the basin using the modeled hydrologic period of 1940-2016.

San Antonio River Basin

The headwaters of the San Antonio River are within Bandera County. Medina Lake, located within the San Antonio River Basin, was constructed in 1911 to provide irrigation water for farmers to the southwest of San Antonio. Although commonly referred to as Medina Lake, the lake is actually a system consisting of Medina Lake and Diversion Lake (the latter being where diversions from this dual-lake system are authorized). Diversion Lake was impounded in 1913, and is located approximately 4 miles downstream of Medina Lake.

For the San Antonio River Basin, the most recently available official TCEQ Guadalupe/San Antonio WAM Run 3 (ver. Oct. 1, 2023) will be employed for all availability analyses in the basin using the modeled hydrologic period of 1934-1989.

Guadalupe River Basin

The portion of the Guadalupe River Basin within the Plateau Region lies almost entirely within Kerr County. Three tributaries (Johnson Creek, North Fork, and South Fork) converge west of the City of Kerrville, forming the Guadalupe River course. Three recreational reservoirs permitted for non-consumptive, recreational uses are located in the basin near Kerrville. As noted in the 2021 Plateau Regional Water Plan, "Pursuant to a Memorandum of Understanding (MOU) between the Guadalupe-Blanco River Authority (GBRA) and the Commissioner's Court of Kerr County, the South Central Texas Water Planning Group (Region L) recognizes a potential commitment of approximately 2,000 acre-feet/year from the firm yield of Canyon Reservoir for the calendar years 2021 through 2050. GBRA's hydrology studies indicate that a commitment of about 2,000 acre-feet/year would be necessary to allow permits for 6,000 acre-feet/year to be issued by TCEQ for diversions in Kerr County."

For the Guadalupe River Basin, the most recently available official TCEQ Guadalupe/San Antonio WAM Run 3 (ver. Oct. 1, 2023) will be employed for all availability analyses in the basin using the modeled hydrologic period of 1934-1989.

Simulation of Reservoir Conditions (Sedimentation)

As mentioned previously, the two reservoirs located within the Plateau Region are Amistad Reservoir (located in the Rio Grande River Basin) and Medina Lake (San Antonio River Basin). Canyon Reservoir (located in the Guadalupe River Basin) is located within Region L, and as mentioned above has been recognized in previous planning as a potential supply for Kerr County in the Plateau Region. Although these reservoirs do not presently provide supply to the region, each could do so in the future pending availability of firm supplies.

In the consideration of available firm supplies under existing and future conditions, reservoir sedimentation can reduce the storage capacity of a reservoir, impacting the beneficial uses of reservoirs such as water supply, flood control, hydropower, navigation, and recreation. Surveys of volumetric storage in a reservoir allow for the derivation of rates and loadings of sediment to the reservoir. The annual loading can then be distributed to determine a revised elevation-area-capacity curve which models the distribution of the total volume of sediment accumulated at the end of an analysis period. The resultant area-capacity relationship is then incorporated into the applicable WAM for the given reservoir.

For those reservoirs lacking volumetric surveys, original area-capacity relations employed within WAM Run 3 will be assumed constant. If a reservoir (or system) is calculated to have no firm yield, that result will be assumed for all decades in the 2030-2080 planning horizon. For reservoirs with available volumetric survey information, an annual sediment rate will be calculated, and loadings calculated for Year 2030 and Year 2080. Sediment distribution within the reservoir will be calculated using the USACE Empirical Area Reduction Method (EARM) and employed within the applicable WAM to calculate 2030 and 2080 area/capacity relations and accordant firm yields. The intervening decadal firm yields will then be linearly interpolated.

For the evaluation of water management strategies, sedimentation effects will be implemented for the reservoir under consideration, whereas other reservoirs will be assumed at their original area/capacities. This assumption represents the more conservative representation of availability in a manner consistent with planning rules and TWDB guidelines.

Interregional Coordination

Major downstream water rights include those in Region L supplied by the GBRA out of Canyon Lake and by the Bexar-Medina-Atascosa WCID #1 out of the Medina/Diversion system. The firm yields of Canyon and Medina can limit the amount of water available for appropriation in both the Plateau Region and Region L. Major downstream water rights in Region M (i.e., cities and irrigators on the Rio Grande downstream from Amistad Reservoir) do not limit the amount of water available for appropriation in the Plateau Region because currently the Plateau Region does not depend on the Falcon-Amistad system. TCEQ's Lower Rio Grande Watermaster allocates water rights on the Rio Grande according to the supply in the Amistad Reservoir and in accordance with the 1944 International Treaty with Mexico.

For those instances where modeled surface water supply results can inform upon or impact determinations of surface water availability in the Plateau Region or other regions, modeled results and approaches will be shared and coordinated to ensure consistency between regions, in a manner consistent with TWDB guidelines and the assumptions described herein.

Conclusion

These assumptions are recommended to be used throughout the regional planning process for analyses that determine water availability for existing supplies, and also for analyses to determine the potential supplies available for new water management strategies. Specifics regarding surface water availability modeling of each river basin are presented by basin in the completed hydrologic variance forms provided in Attachment A. The assumptions described herein require the approval of the TWDB in order to be incorporated into the Plateau RWPG's analyses.

If you have any questions regarding this request, please contact me at your convenience. We appreciate the TWDB's consideration of this request.

Sincerely,

Jonathan Letz
Chair, Plateau Regional Water Planning Group

Enclosures: Attachment A

cc: Tara Busnhnoe, UGRA General Manager
Jennifer Herrera, WSP Technical Consultant
Tony Smith, P.E., Carollo Engineers, Technical Consultant

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: J

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.

   Rio Grande

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.

   - Request inclusion of return flows for evaluation of strategy supplies.

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

   The above requests were submitted in the 2021and 2016 planning cycles and are unchanged from the previous planning cycle request.

[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.

   No

   Choose an item.

   Click or tap here to enter text.

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.

   Yes

   Strategy Supply

   Evaluations of reuse strategies will use the return flows from TCEQ WAM Run 8. This approach is consistent with the methods employed by TCEQ in their evaluations of reuse during their permitting process where the permitted, minimum historical, and present discharges relevant to a particular WUG are all considered in the evaluation of a reuse permit.

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.

    Not Applicable

[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.

Surface Water Hydrologic Variance Request Checklist

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Water Planning Region: J

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.

   Nueces

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.

   - Request inclusion of return flows for evaluation of strategy supplies.

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

   The above requests were submitted in the 2021and 2016 planning cycles and are unchanged from the previous planning cycle request.

[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.

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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.

   No

   Choose an item.

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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.

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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.

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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.

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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.

   Yes

   Strategy Supply

   Evaluations of reuse strategies will use the return flows from TCEQ WAM Run 8. This approach is consistent with the methods employed by TCEQ in their evaluations of reuse during their permitting process where the permitted, minimum historical, and present discharges relevant to a particular WUG are all considered in the evaluation of a reuse permit.

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.

    Not Applicable

[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.

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Water Planning Region: J

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.

   Colorado

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.

   - Request inclusion of return flows for evaluation of strategy supplies.

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

   The above requests were submitted in the 2021and 2016 planning cycles and are unchanged from the previous planning cycle request.

[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.

   No

   Choose an item.

   Click or tap here to enter text.

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.

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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.

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   Choose an item.

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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.

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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.

   Yes

   Strategy Supply

   Evaluations of reuse strategies will use the return flows from TCEQ WAM Run 8. This approach is consistent with the methods employed by TCEQ in their evaluations of reuse during their permitting process where the permitted, minimum historical, and present discharges relevant to a particular WUG are all considered in the evaluation of a reuse permit.

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.

    Not Applicable

[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.

Surface Water Hydrologic Variance Request Checklist

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Water Planning Region: J

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.

   San Antonio

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.

   - Request inclusion of return flows for evaluation of strategy supplies.

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

   The above requests were submitted in the 2021and 2016 planning cycles and are unchanged from the previous planning cycle request.

[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.

   No

   Choose an item.

   Click or tap here to enter text.

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.

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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.

   Yes

   Strategy Supply

   Evaluations of reuse strategies will use the return flows from TCEQ WAM Run 8. This approach is consistent with the methods employed by TCEQ in their evaluations of reuse during their permitting process where the permitted, minimum historical, and present discharges relevant to a particular WUG are all considered in the evaluation of a reuse permit.

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.

    Not Applicable

[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.

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: J

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.

   Guadalupe

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.

   - Request inclusion of return flows for evaluation of strategy supplies.

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

   The above requests were submitted in the 2021and 2016 planning cycles and are unchanged from the previous planning cycle request.

[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.

   No

   Choose an item.

   Click or tap here to enter text.

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.

   Yes

   Strategy Supply

   Evaluations of reuse strategies will use the return flows from TCEQ WAM Run 8. This approach is consistent with the methods employed by TCEQ in their evaluations of reuse during their permitting process where the permitted, minimum historical, and present discharges relevant to a particular WUG are all considered in the evaluation of a reuse permit.

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.

    Not Applicable

[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.

Appendix H. Plateau WPG WAM Files

Folder Name	Description	Use	Version Date	Simulation Date
colo-full	Files for Colorado River Basin Region J WAM with no modifications from TCEQ Run3.	Colorado River Basin Run-of-river minimum annual diversions.	10/1/2023	3/29/2024
gsa-full	Files for Guadalupe San Antonio River Basin Region J WAM with no modifications from TCEQ Run3.	Guadalupe San Antonio River Basin Run-of-river minimum annual diversions and firm yields for municipal diversions.	10/1/2023	4/1/2024
nueces-full	Files for Nueces River Basin Region J WAM with no modifications from TCEQ Run3.	Nueces River Basin Run-of-river minimum annual diversions and firm yields for municipal diversions.	10/1/2023	4/1/2024
riogrande-full	Files for Rio Grande River Basin Region J WAM with no modifications from TCEQ Run3.	Rio Grande River Basin Run-of-river minimum annual diversions and firm yields for municipal diversions.	10/1/2023	4/1/2024

(The electronic files described above are submitted separately as a digital deliverable to this memorandum.)

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Appendix H.2. TWDB Response to Region J Hydrologic Variance 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

January 4, 2024

Jonathan Letz
Chairman, Region J
Plateau Regional Water Planning Group
700 Main Street
Kerrville, TX 78028

Dear Chairman Letz:

I have reviewed your request dated October 27, 2023, for approval of alternative water supply assumptions to be used in determining future surface water availability. This letter confirms that the TWDB approves the following assumptions that require a variance:

- Include return flows for evaluation of strategy supplies for the Rio Grande, Nueces, Colorado, San Antonio, and Guadalupe River Basins. Evaluations of reuse strategies will use the return flows from TCEQ WAM Run 8.

For the purpose of evaluating potentially feasible water management strategies, the TCEQ WAM Run 3 is to be used, with the exception approved above. While the use of these modified conditions may be reasonable for planning purposes, WAM RUN3 would be utilized by the Texas Commission on Environmental Quality for analyzing permit applications. It is acceptable to use the modified conditions for WMS supply evaluations only if the yield produced is more conservative (less) for surface water appropriations than WAM RUN3.

While the TWDB authorizes this modification to evaluate future water supplies for development of the 2026 Region J 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.*

Please do not hesitate to contact Lann Bookout of our Regional Water Planning staff at 512-926-9439 or lann.bookout@twdb.texas.gov if you have any questions.

Sincerely,

Matt Nelson
Deputy Executive Administrator

c: Tara Bushnoe, UGRA
Jennifer Jackson, WSP
Tony Smith, P.E., Carollo
Lann Bookout, Water Supply Planning
Sarah Lee, Water Supply Planning
Nelun Fernando, Ph.D., Surface Water

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Appendix I. Model Input and Output Files for the Region J WAMs

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Appendix J. Region J Groundwater Source Availability Methodology

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Region J 2026 Groundwater Source Availability Methodology

Source Supply	County	Basin	Methodology
Austin Chalk Aquifer	Kinney	Rio Grande	0.6% (0.006) of average annual rainfall (22 in) over the aquifer outcrop (189,377 acres) as recharge. Calculated by Planning Group consultant (WSP).
		Nueces	Based on Robert Bradley's analysis of the number of wells in the TWDB Groundwater Database. GMA10
Nueces River Alluvium Aquifer	Edwards	Nueces	Recharge plus 0.1 volume of water in storage. See Plateau Region Report: Occurrence of Significant River Alluvium Aquifers in the Plateau Region (2010). www.ugra/plateau-water-planning-group
	Real	Nueces	
Frio River Alluvium Aquifer	Real	Nueces	
Ellenburger/San Saba Aquifer	Kerr	Colorado	Annual availability of 0.007 acre-feet/acre/year over 286,000 acres of prime production zone in eastern Kerr County. See Sec 3.1.8 of the 2021 Plan.
		Guadalupe	
Edwards-BFZ Aquifer	Kinney	Nueces	GMA10 MAG
		Rio Grande	
Edwards Group of the Edwards-Trinity (Plateau) Aquifer	Kerr	Colorado	GMA9 Non-Relevant, TWDB modeled run compatible with DFC, which was provided to PWPG.
		Guadalupe	
		Nueces	
		San Antonio	
	Bandera	Guadalupe	GMA9 MAG
		Nueces	
		San Antonio	
Edwards-Trinity (Plateau), Pecos Valley, Trinity Aquifer	Edwards	Colorado	GMA7 MAG
		Nueces	
		Rio Grande	
	Kinney	Nueces	
		Rio Grande	
	Real	Colorado	
		Nueces	
		Guadalupe	
	Val Verde	Rio Grande	

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(continued) Region J 2026 Groundwater Source Availability Methodology

Source Supply	County	Basin	Methodology
Trinity Aquifer	Bandera	Guadalupe	GMA9 MAG
		Nueces	
		San Antonio	
	Kerr	Colorado	
		Guadalupe	
		Nueces	
		San Antonio	

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Appendix K. List of Potentially Feasible Water Management Strategies

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Region J 2026 List of Potentially Feasible Water Management Strategies

County	Water User Group	Strategy
Bandera	City of Bandera	Reuse treated wastewater effluent for irrigation of public spaces
		Promote, design & install rainwater harvesting systems on public buildings
		Additional Lower Trinity well and lay necessary pipeline **ALTERNATE**
		Additional Middle Trinity wells within City water infrastructure area
		Surface water acquisition, treatment and ASR
	*Bandera County FWSD #1	Public conservation education
		Additional groundwater well
	*Bandera County Other – Bandera River Ranch #1	Water loss audit and main-line repair for
	*Bandera County Other - Lake Medina Shores	Public conservation education
		Additional groundwater wells **ALTERNATE**
	*Bandera County Other - Medina WSC	Public conservation education
		Additional groundwater well
	Bandera County Other	Drought management (BCRAGD)
	Bandera County Other – Volunteer Fire Dept.	Additional groundwater wells to provide emergency supply **ALTERNATE**
	Bandera County Other - Enchanted River Estates	Water loss audit and main-line repair
	Bandera County Other	Drought management (BCRAGD)
	*Bandera County Irrigation	Irrigation scheduling
		Additional groundwater wells
	*Bandera County Livestock	Livestock conservation
		Additional groundwater well
		Livestock conservation
		Additional groundwater well

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(continued) Region J 2026 List of Potentially Feasible Water Management Strategies

County	Water User Group	Strategy
Edwards	City of Rocksprings	Public conservation education
		Additional groundwater well
	Edwards County Other (Barksdale WSC)	Additional well in the Nueces River Alluvium Aquifer and RO wellhead treatment
	*Edwards County Mining	Additional groundwater well
		Additional groundwater well
		Additional groundwater wells
Kerr	*City of Kerrville	Increase wastewater reuse
		Water loss audit and main-line repair
		Explore and develop new Ellenburger Aquifer well supply
		Increased water treatment and ASR capacity
	Kerr County Other - Eastern Kerr County Regional Water Supply Project	Project 1. Construction of an Ellenburger Aquifer water supply well
		Project 2. Construction of off-channel surface water storage
		Project 2. Construction of surface water treatment facilities and transmission lines
		Project 3. Construction of ASR facility
		Project 4. Construction of Trinity Aquifer wellfield for dense, rural areas
		Project 4. Construction of desalination plant
	Kerr County Other - *Center Point	Public conservation education
		Purchase water from EKCRWSP
	Kerr County Other - *Center Point Taylor System	Public conservation education
		Purchase water from EKCRWSP
	Kerr County Other - Verde Park Estates	Water loss audit and main-line repair
	*Kerr County Other	Public conservation education
	*Kerr County Livestock	Livestock conservation
		Additional groundwater wells **ALTERNATE**
		Livestock conservation
		Additional groundwater wells **ALTERNATE**
		Livestock conservation
		Additional groundwater well **ALTERNATE**

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(continued) Region J 2026 List of Potentially Feasible Water Management Strategies

County	Water User Group	Strategy
Kerr	*Kerr County Livestock	Livestock conservation
		Additional groundwater well **ALTERNATE**
	*Kerr County Mining	Additional groundwater wells
Kinney	City of Brackettville	Increase supply to Spofford with new water line
		Increase storage facility
	Fort Clark Springs MUD	Water loss audit and main-line repair
		Increase storage facility
Real	*City of Camp Wood	Public conservation education
		Additional groundwater wells
	City of Leakey	Additional groundwater well
		Develop interconnections between wells within the City
	Real County Other - Real WSC	Water loss audit and main-line repair
	Real County Other - Oakmont Saddle Mountain WSC	Additional groundwater well
Val Verde	*City of Del Rio	Water loss audit and main-line repair
		Additional groundwater well
		Water treatment plant expansion
		Develop a wastewater reuse program
	Laughlin Air Force Base	Purchase water from City of Del Rio
	Val Verde County Other - Val Verde County WCID Comstock	Water loss audit and main-line repair
	Val Verde County Other - San Pedro Canyon Upper Subdivision	Water loss audit and main-line repair
	Val Verde County Other - Tierra Del Lago	Water loss audit and main-line repair
	*Val Verde County Mining	Additional groundwater wells

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Appendix L. List of Infeasible Water Management Strategies and Water Management Strategy Projects from the 2021 Plateau Water Plan

No Water Management Strategies or Water Management Strategy Projects from the 2021 Plateau Water Plan have been identified as infeasible by the PWPG.