Region A
Panhandle Water
Planning Group

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

July 18, 2023

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

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

Dear Mr. Walker,

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

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

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

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

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

Safe Yield

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

Canadian River Basin

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

Red River Basin

No changes are proposed.

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

Sincerely,

Ben Weinheimer

Ben Weinheimer
Chairman, Region A - Panhandle water Planning Group

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

ATTACHMENT A
HYDROLOGIC VARIANCE REQUEST FORMS

PANHANDLE WATER PLANNING AREA (REGION A)

Surface Water Hydrologic Variance Request Checklist

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

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

Water Planning Region: A

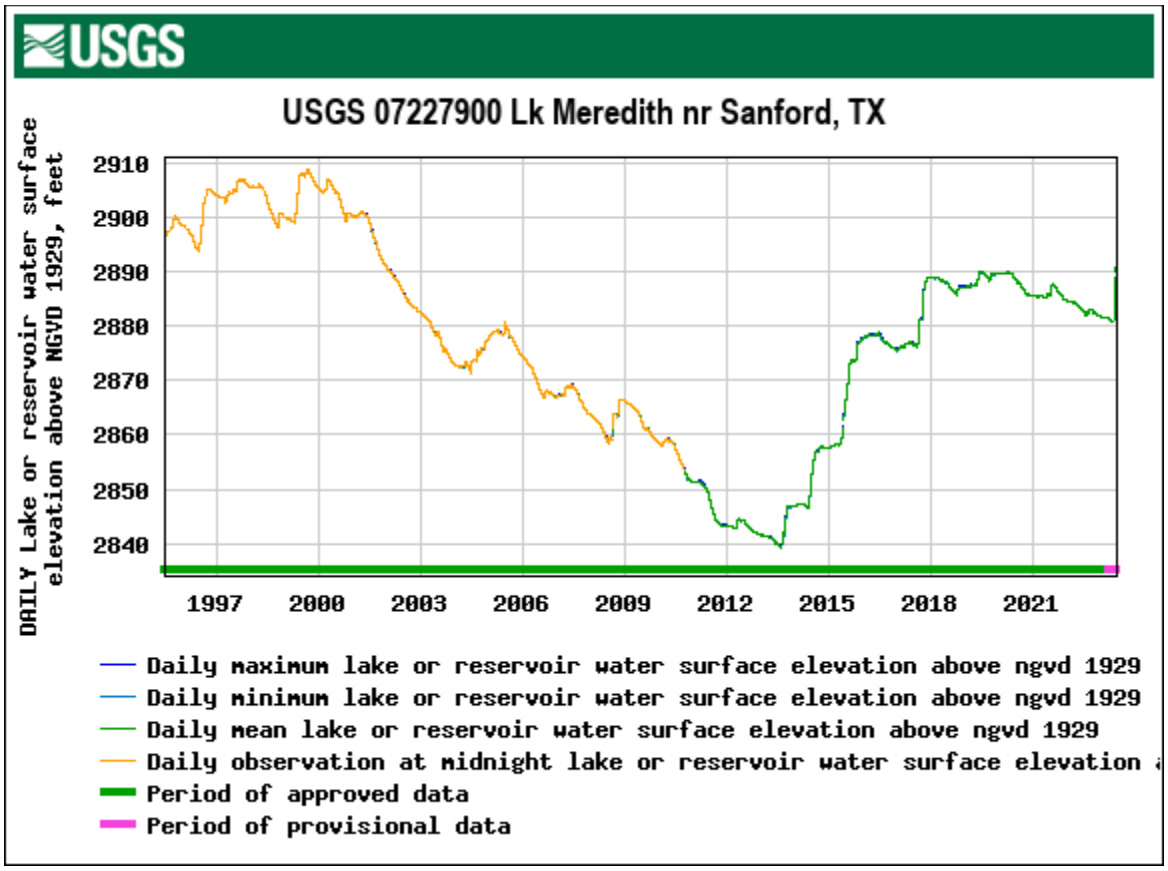
1. Which major river basin does the request apply to? Please specify if the request only applies part of the basin or only to certain reservoirs.

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

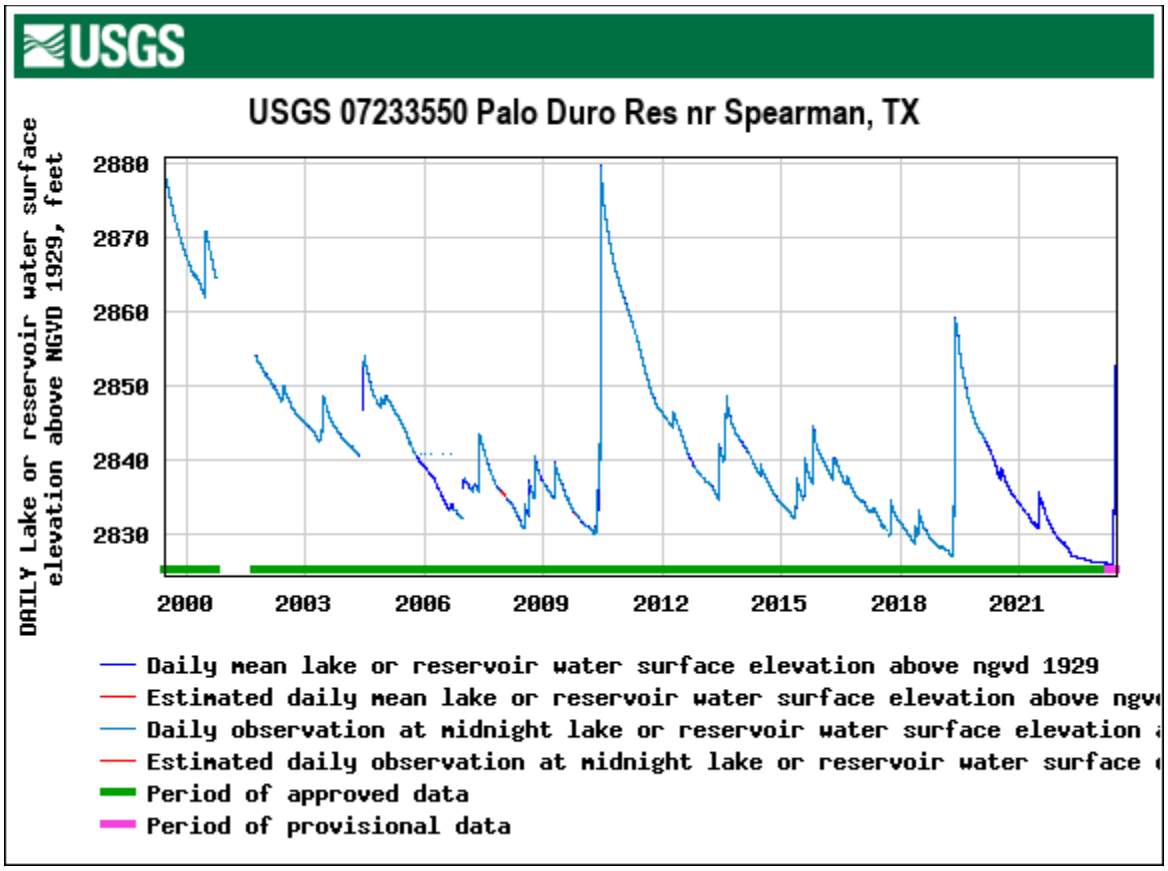
2. Please give a brief, bulleted, description of the requested hydrologic variances including how the alternative availability assumptions vary from rule requirements, how the modifications will affect the associated annual availability volume(s) in the regional water plan, and why the variance is necessary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

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

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



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



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

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

   Yes

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

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

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

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

   Yes

   Existing Supply

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

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

   Yes

   Existing Supply

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

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

   No

   Choose an item.

   Click or tap here to enter text.

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

   Yes

Existing Supply

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

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

   No

   Choose an item.

   Click or tap here to enter text.

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

   No

   Choose an item.

   Click or tap here to enter text.

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

    No

    Click or tap here to enter text.

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

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

Click or tap here to enter text.

Surface Water Hydrologic Variance Request Checklist

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

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

Water Planning Region: A

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

   Red River Basin. Greenbelt Lake.

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

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

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

   Yes

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

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

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

   No

   Choose an item.

   Click or tap here to enter text.

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

   Yes

   Existing Supply

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

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

   No

   Choose an item.

   Click or tap here to enter text.

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

   No

   Choose an item.

   Click or tap here to enter text.

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

   No

   Choose an item.

   Click or tap here to enter text.

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   No

   Choose an item.

   Click or tap here to enter text.

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

    Unknown

    Click or tap here to enter text.

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

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