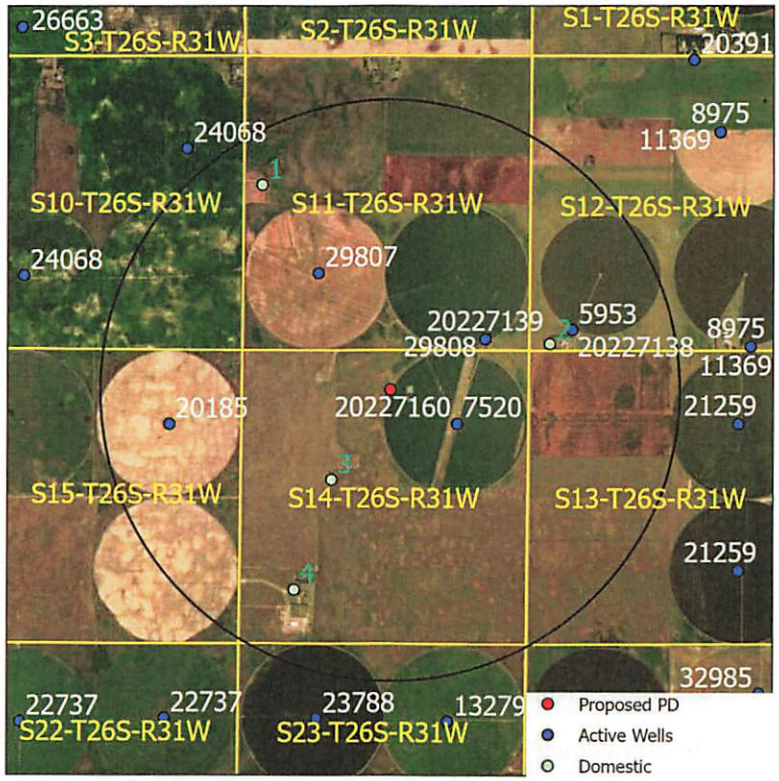
**Evaluation of proposed move for Water Right No. 29807**

Proposed: Move Water Right No. 29807 to a new location 2505 ft to the southeast.




Wells within 1 mile: 29808, 5953, 20158, 7520, and four domestic wells, numbered on the above map.

The saturated thickness at the proposed well location is estimated to be 128 ft, based upon the GMD3 model. For saturated thickness between than 125 ft and 150 ft, the drawdown allowance is 3.0 ft.

**50 year Theis Analysis:** The following values were used to run the analysis:

S = 0.1214, T = 3790 $ft^2$/day, $tp_{current}$ = 90 days, $Q_{current}$ = 100 gpm, $tp_{proposed}$ = 57 days, $Q_{proposed}$ = 900 gpm

Theis drawdowns were calculated as follows:

29808: Drawdown from current location = 0.54 ft

Drawdown from proposed location = 4.61 ft

Net drawdown = **4.1 ft**

5953: Drawdown from current location = 0.42 ft

Drawdown from proposed location = 2.92 ft

Net drawdown = **2.5 ft**

| | |
|---|---|
| 20185: | Drawdown from current location = 0.48 ft |
| | Drawdown from proposed location = 2.65 ft |
| | Net drawdown = **2.2 ft** |
| 7520: | Drawdown from current location = 0.49 ft |
| | Drawdown from proposed location = 6.15 ft |
| | Net drawdown = **5.67ft** |
| Domestic 1: | Drawdown from current location = 0.78 ft |
| | Drawdown from proposed location = 2.53 ft |
| | Net drawdown = **1.7 ft** |
| Domestic 2: | Drawdown from current location = 0.44 ft |
| | Drawdown from proposed location = 3.26 ft |
| | Net drawdown = **2.8 ft** |
| Domestic 3: | Drawdown from current location = 0.49 ft |
| | Drawdown from proposed location = 4.66 ft |
| | Net drawdown = **4.2 ft** |
| Domestic 4: | Drawdown from current location = 0.37 ft |
| | Drawdown from proposed location = 2.68 ft |
| | Net drawdown = **2.3 ft** |

Net drawdown exceeds the drawdown allowance for the wells authorized under water right nos. 29808, 7520, as well as Domestic 3. Critical well analysis was performed for those wells.

**Critical Well Evaluation:**

**29808:**

Water Column = 90 ft

DP = 4.1 ft (Net drawdown from the proposal indicated above)

DE = 45 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DD = 20 ft (S = 0.1897, T = 3369 $ft^2$/day, Q = 200 gpm, tp = 121 days, efficiency = 70%)

DT = 69.1 ft

Economic Drawdown Constraint (EDC) = 0.4 * 90 ft = 36 ft

Physical Drawdown Constraint (PDC) = 90 ft – 60 ft = 30.0 ft

Total drawdown of 69.1 ft is greater than the EDC and the PDC, so this well **is critical.**

**7520:**

Water Column = 128 ft

DP = 5.7 ft (Net drawdown from the proposal indicated above)

DE = 47.1 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DD = 35.3 ft (S = 0.1214, T = 3790 $ft^2$/day, Q = 400 gpm, tp = 64 days, efficiency = 70%)

DT = 88.1 ft

Economic Drawdown Constraint (EDC) = 0.4 * 128 ft = 51.2 ft

Physical Drawdown Constraint (PDC) = 128 ft – 60 ft = 68 ft

Total drawdown of 88.1 ft exceeds the EDC and the PDC, so this well **is critical.**

**Domestic 3:**

Water Column = 128 ft

DP = 4.2 ft (Net drawdown from the proposal indicated above)

DE = 47.1 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DT = 51.3 ft

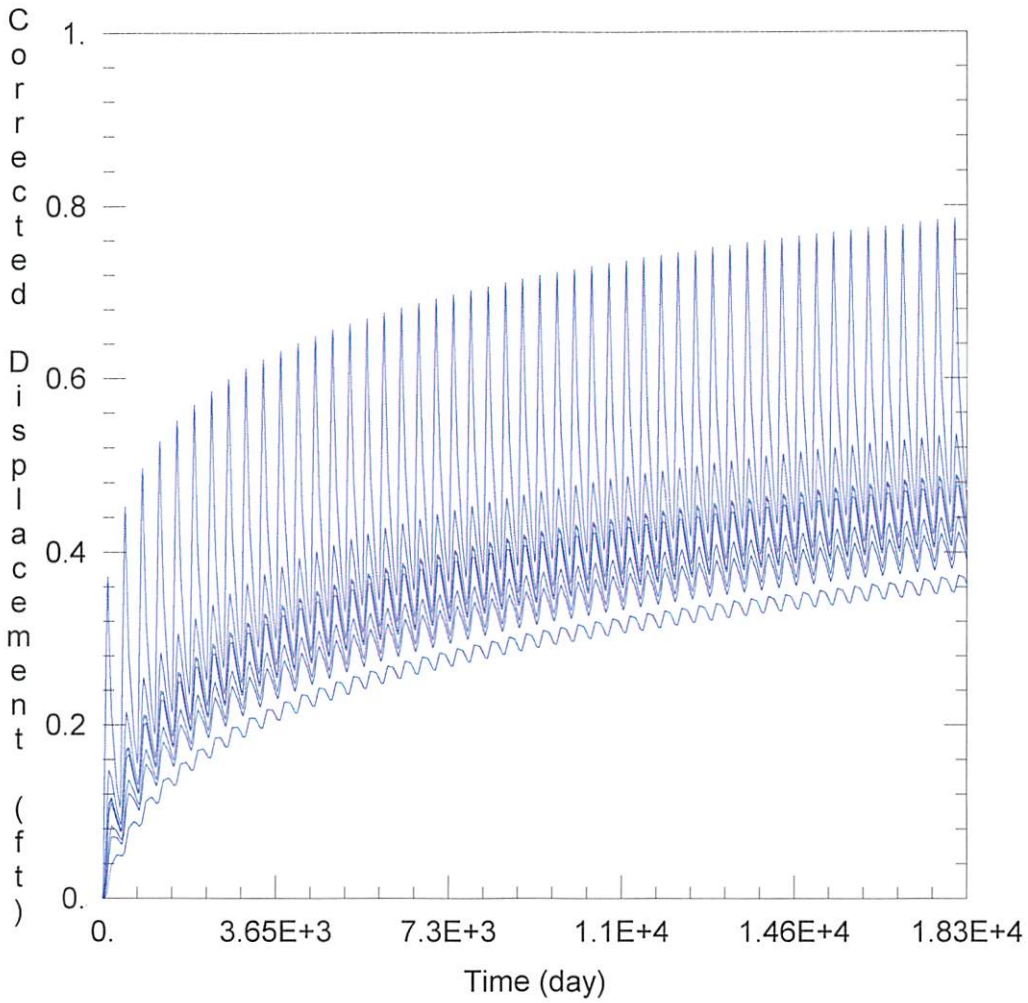
Economic Drawdown Constraint (EDC) = 0.4 * 128 ft = 51.2 ft

Physical Drawdown Constraint (PDC) = 128 ft – 20 ft = 108 ft

Total drawdown of 51.3 ft exceeds the EDC, so this well **is critical.**

**Conclusion:**

The proposed move is in a declining aquifer area with about 120 ft of remaining saturated thickness. The analysis shows that net well-to-well effects created by this proposal are likely to be small but noticeable to the nearest wells, due to the limited amount of remaining aquifer. Three nearby wells were flagged as critical because projected aquifer declines over the next 25 years amount to more than 40% of the remaining saturated thickness. Concerned neighbors should contact GMD3 at (620) 275-7147 or the Division of Water Resources at (620) 276-2901.




## WELL TEST ANALYSIS

Data Set: C:\Users\scanstation\Documents\move requests\29807\29807 current.aqt
Date: 05/16/24 Time: 11:49:22

## PROJECT INFORMATION

Project: 29807
Location: Gray County

## WELL DATA

Pumping Wells

| Well Name | X (ft) | Y (ft) |
|---|---|---|
| 29807 | 33559 | 336421 |

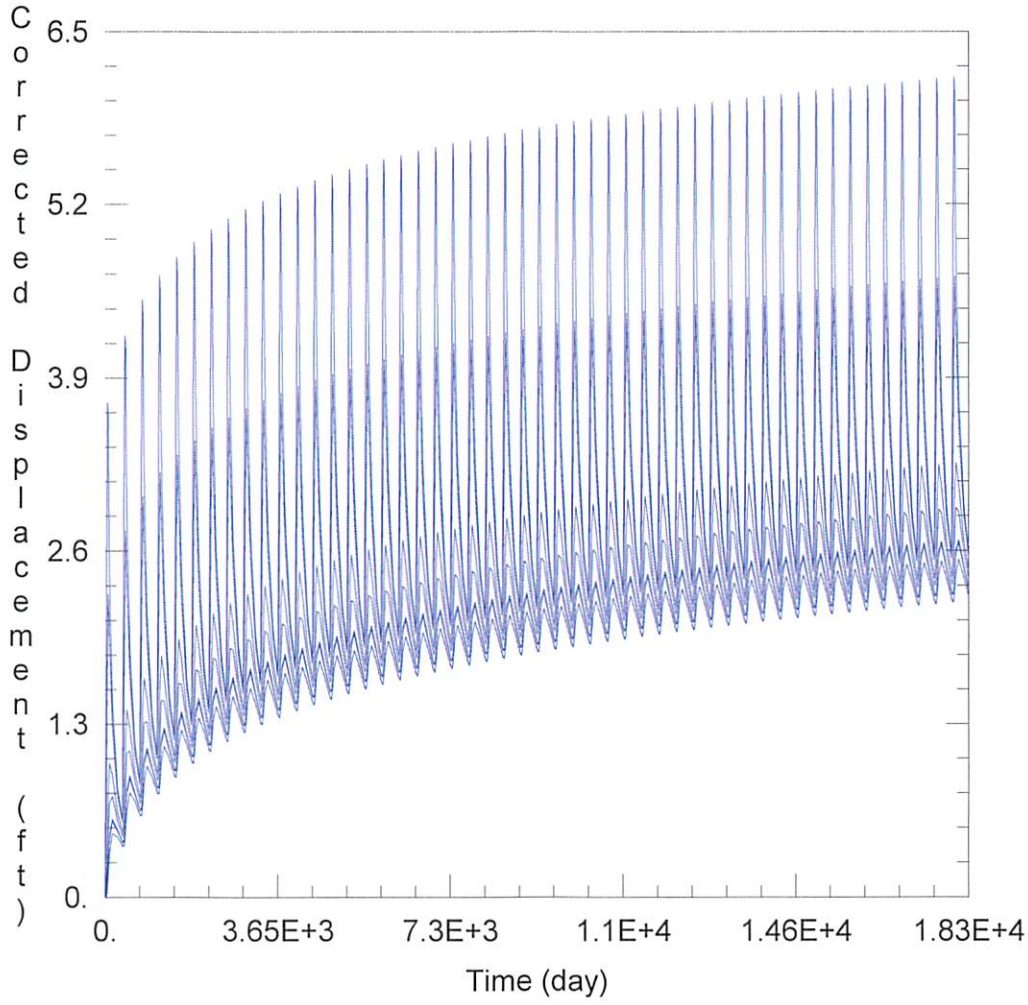
Observation Wells

| Well Name | X (ft) | Y (ft) |
|---|---|---|
| ▫ | 33559 | 336421 |
| ▫ 29808 | 36602 | 335211 |
| ▫ 5953 | 38187 | 335389 |
| ▫ 20185 | 30846 | 333676 |
| ▫ 7520 | 36091 | 333693 |
| ▫ Domestic 1 | 32537 | 338021 |
| ▫ Domestic 2 | 37782 | 335132 |
| ▫ Domestic 3 | 33802 | 332676 |
| ▫ Domestic 4 | 33131 | 330674 |

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Theis

T = 3790. $ft^2$/day
S = 0.1214
Kz/Kr = 1.
b = 128. ft




## WELL TEST ANALYSIS

Data Set: C:\Users\scanstation\Documents\move requests\29807\29807 propsed.aqt
Date: 05/16/24 Time: 11:50:41

## PROJECT INFORMATION

Project: 29807
Location: Gray County

## WELL DATA

Pumping Wells

| Well Name | X (ft) | Y (ft) |
|---|---|---|
| 29807 | 34874 | 334289 |

Observation Wells

| Well Name | X (ft) | Y (ft) |
|---|---|---|
| ▫ | 34874 | 334289 |
| ▫ 29808 | 36602 | 335211 |
| ▫ 5953 | 38187 | 335389 |
| ▫ 20185 | 30846 | 333676 |
| ▫ 7520 | 36091 | 333693 |
| ▫ Domestic 1 | 32537 | 338021 |
| ▫ Domestic 2 | 37782 | 335132 |
| ▫ Domestic 3 | 33802 | 332676 |
| ▫ Domestic 4 | 33131 | 330674 |

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Theis

T = 3790. $ft^2$/day
S = 0.1214
Kz/Kr = 1.
b = 128. ft