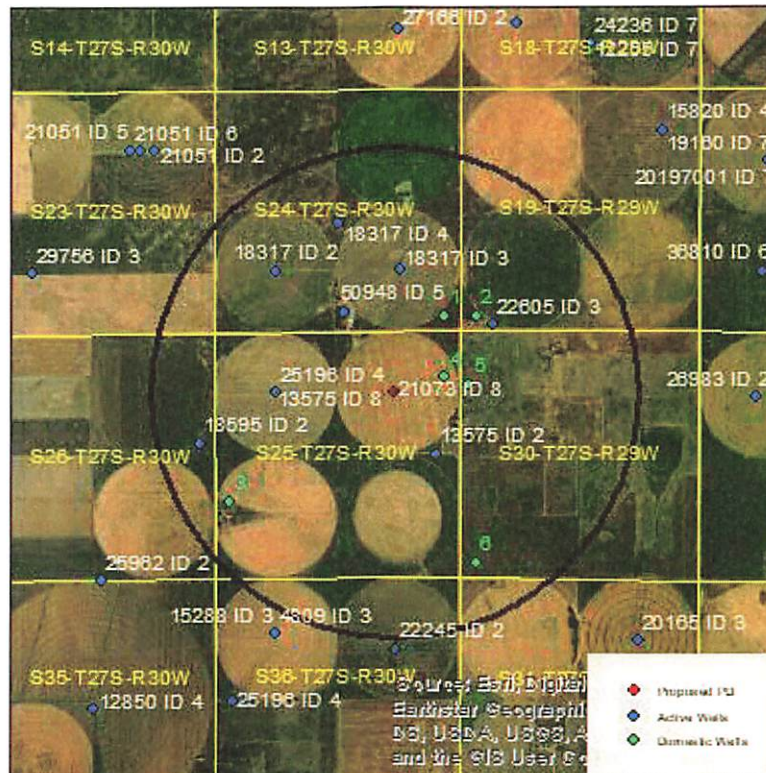**Evaluation of proposed move for Water Right No. 11915**

Proposed: move Water Right No. 11915 2346 feet to the south.

Wells within 1 mile: 18645, 4844 & 7759, 779 & 3232 & 23296, 7952, 23241, 9896 ID 1, 9896 ID 4, and 21111.

The saturated thickness at the proposed well location is estimated to be 78.5 ft, based upon the GMD3 model. For saturated thickness between than 75 ft and 100 ft, the drawdown allowance is 2.0 ft.

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

$S = 0.1285$, $T = 5765.106$ ft^2/day, tp$_{current}$ = 72 days, $Q_{current}$ = 308 gpm, tp$_{proposed}$ = 126 days,

$Q_{proposed}$ = 1190 gpm

Theis drawdowns were calculated as follows:

18645:	Drawdown from current location = 0.984 ft
	Drawdown from proposed location = 5.04 ft
	Net drawdown = **4.1 ft**
4844 & 7759:	Drawdown from current location = 0.689 ft
	Drawdown from proposed location = 5.26 ft
	Net drawdown = **4.57 ft**

779 & 3232 & 23296:	Drawdown from current location = 1.07 ft
	Drawdown from proposed location = 4.84 ft
	Net drawdown = **3.8 ft**
7952:	Drawdown from current location = 0.69 ft
	Drawdown from proposed location = 5.97 ft
	Net drawdown = **5.3 ft**
23241:	Drawdown from current location = 0.75 ft
	Drawdown from proposed location = 7.53 ft
	Net drawdown = **6.8 ft**
9896 ID 1:	Drawdown from current location = 0.68 ft
	Drawdown from proposed location = 5.91 ft
	Net drawdown = **5.2 ft**
9896 ID 4:	Drawdown from current location = 0.78 ft
	Drawdown from proposed location = 5.77 ft
	Net drawdown = **5.0 ft**
21111:	Drawdown from current location = 0.61 ft
	Drawdown from proposed location = 5.37 ft
	Net drawdown = **4.8 ft**

Net drawdown exceeds the drawdown allowance for all wells within 1 mile of the proposed well location. Critical well analysis was performed for those wells.

Critical Well Evaluation:

18645:

Water Column = 109.5 ft

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

DE = 49 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DD = 31.6 ft (S = 0.124, T = 2284.095 ft²/day, Q = 240 gpm, tp = 99 days, efficiency = 70%)

DT = 84.7 ft

Economic Drawdown Constraint (EDC) = 0.4 * 109.5 ft = 43.8 ft

Physical Drawdown Constraint (PDC) = 109.5 ft – 60 ft = 49.5 ft

Total drawdown of 84.7 ft is greater than the EDC and the PDC, so this well **is critical.**

4844 & 7759:

Water Column = 74.9 ft

DP = 4.6 ft (Net drawdown from the proposal indicated above)

DE = 48.5 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DD = 28.6 ft (S = 0.1398, T = 11146.96 ft²/day, Q = 240 gpm, tp = 99 days, efficiency = 70%)

DT = 81.7 ft

Total drawdown of 81.7 ft exceeds the water column, so this well **is critical.**

779 & 3232 & 23296:

Water Column = 74.3 ft

DP = 3.8 ft (Net drawdown from the proposal indicated above)

DE = 50.2 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DD = 0 ft (no use in last 10 years)

DT = 54 ft

Economic Drawdown Constraint (EDC) = 0.4 * 74.3 ft = 29.7 ft

Physical Drawdown Constraint (PDC) = 74.3 ft – 60 ft = 14.3 ft

Total drawdown of 54 ft exceeds the EDC and the PDC, so this well **is critical.**

7952:

Water Column = 80.3 ft

DP = 5.8 ft (Net drawdown from the proposal indicated above)

DE = 56.2 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DD = 32.04 ft (S = 0.1469, T = 3655.08 ft²/day, Q = 998 gpm, tp = 141 days, efficiency = 70%)

DT = 94.04 ft

Economic Drawdown Constraint (EDC) = 0.4 * 80.3 ft = 32.1 ft

Physical Drawdown Constraint (PDC) = 80.3 ft – 60 ft = 20.3 ft

Total drawdown of 94.04 ft is greater than the EDC and the PDC, so this well **is critical.**

23241:

Water Column = 80.3 ft

DP = 6.8 ft (Net drawdown from the proposal indicated above)

DE = 56.2 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DD = 16.75 ft (S = 0.2703, T = 11165.16 ft²/day, Q = 513 gpm, tp = 184 days, efficiency = 70%)

DT = 79.8 ft

Economic Drawdown Constraint (EDC) = 0.4 * 80.3 ft = 32.14 ft

Physical Drawdown Constraint (PDC) = 80.3 ft – 60 ft = 20.3 ft

Total drawdown of 79.8 ft is greater than the EDC and the PDC, so this well **is critical.**

9896 ID 1:

Water Column = 103.2 ft

DP = 5.2 ft (Net drawdown from the proposal indicated above)

DE = 51.8 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DD = 51.3 ft (S = 0.124, T = 2284.095 ft²/day, Q = 350 gpm, tp = 107 days, efficiency = 70%)

DT = 108.3 ft

Economic Drawdown Constraint (EDC) = 0.4 * 103.2 ft = 41.3 ft

Physical Drawdown Constraint (PDC) = 103.2 ft – 60 ft = 43.2 ft

Total drawdown of 108.3 ft is greater than the EDC and the PDC, so this well **is critical.**

9896 ID 4:

Water Column = 103.2 ft

DP = 5.0 ft (Net drawdown from the proposal indicated above)

DE = 51.8 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DD = 0 ft (no use in last 10 years)

DT = 56.8 ft

Economic Drawdown Constraint (EDC) = 0.4 * 103.2 ft = 41.3 ft

Physical Drawdown Constraint (PDC) = 103.2 ft – 60 ft = 43.2 ft

Total drawdown of 56.8 ft is greater than the EDC and the PDC, so this well **is critical.**

21111:

Water Column = 80.3 ft

DP = 4.8 ft (Net drawdown from the proposal indicated above)

DE = 56.2 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DD = 6.4 ft (S = 0.2703, T = 11165.16 ft^2/day, Q = 200 gpm, tp = 133 days, efficiency = 70%)

DT = 67.4 ft

Economic Drawdown Constraint (EDC) = 0.4 * 80.3 ft = 32.12 ft

Physical Drawdown Constraint (PDC) = 80.3 ft – 60 ft = 20.3 ft

Total drawdown of 67.4 ft is greater than the EDC and the PDC, so this well **is critical.**

Conclusion:

The proposed move is in a depleted aquifer area with about 80 ft of remaining saturated thickness. The analysis shows that net well-to-well effects created by this proposal are likely to be noticeable, due to the limited amount of remaining aquifer. All 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.
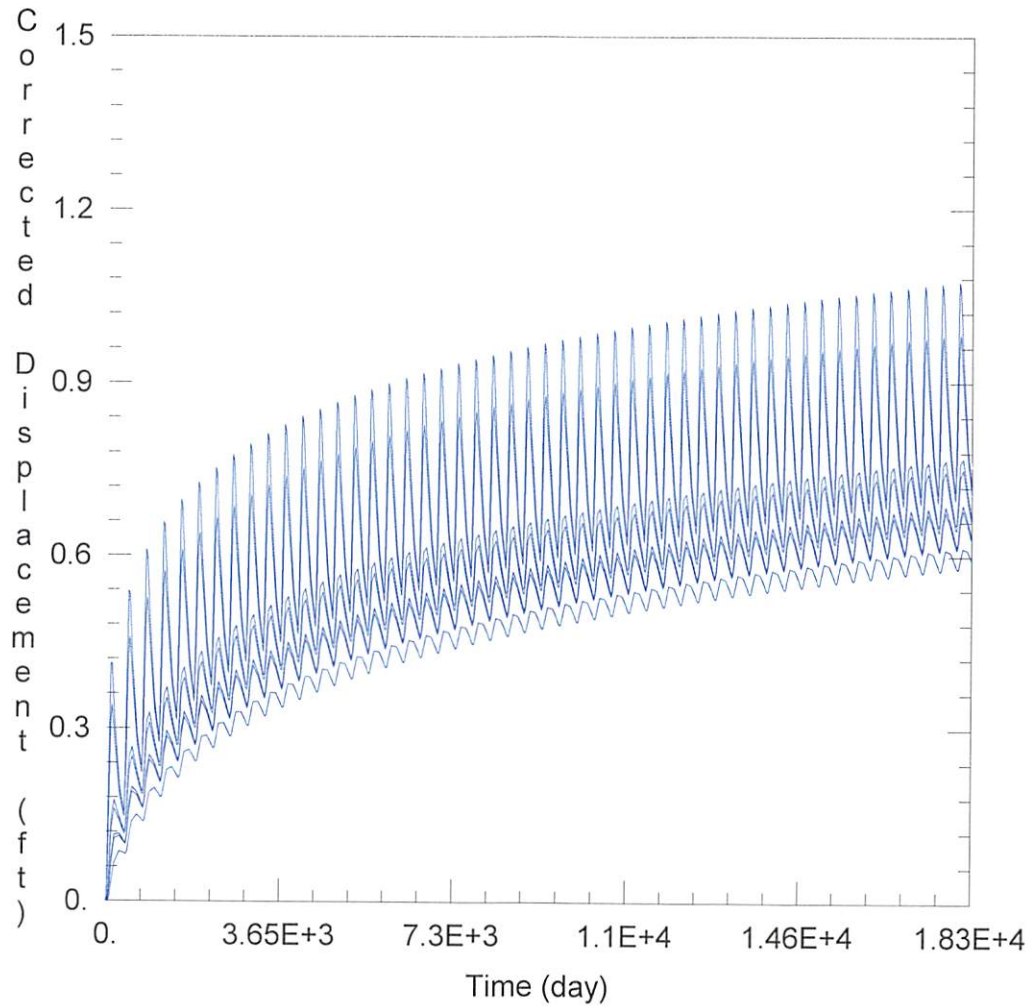
WELL TEST ANALYSIS

Data Set: C:\Users\scanstation\Documents\move requests\11915\11915 current.aqt
Date: 05/22/24   Time: 14:14:20

PROJECT INFORMATION

Project: 41295_42758
Test Well: 11915

WELL DATA

Pumping Wells		
Well Name	X (ft)	Y (ft)
11915	-249992	262044

Observation Wells		
Well Name	X (ft)	Y (ft)
▢	-249992	262044
▢ 18645	-247126	263660
▢ 4844 & 7759	-254320	258431
▢ 779 & 3232 & 23296	-249288	264856
▢ 7952	-252461	256968
▢ 23241	-250460	257172
▢ 9896 ID 1	-247419	256882
▢ 9896 ID 4	-246004	259586
▢ 21111	-248766	255438

SOLUTION

Aquifer Model: Unconfined   Solution Method: Theis

T = 5765.1 ft^2/day   S = 0.1285
Kz/Kr = 1.   b = 78.5 ft
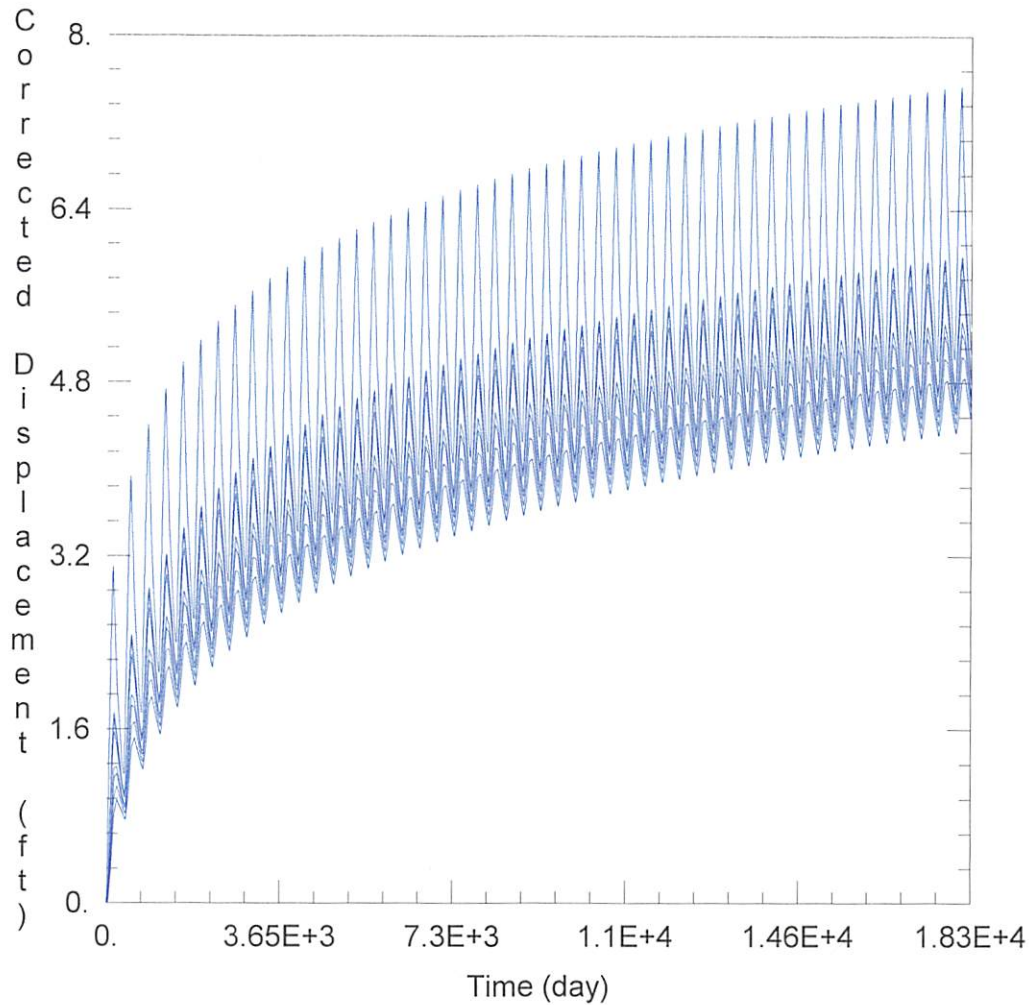
WELL TEST ANALYSIS

Data Set: C:\Users\scanstation\Documents\move requests\11915\11915 proposed.aqt
Date: 05/22/24   Time: 14:14:30

PROJECT INFORMATION

Project: 41295_42758
Test Well: 11915

WELL DATA

Pumping Wells		
Well Name	X (ft)	Y (ft)
11915	-249938	259698

Observation Wells		
Well Name	X (ft)	Y (ft)
▫	-249938	259698
▫ 18645	-247126	263660
▫ 4844 & 7759	-254320	258431
▫ 779 & 3232 & 23296	-249288	264856
▫ 7952	-252461	256968
▫ 23241	-250460	257172
▫ 9896 ID 1	-247419	256882
▫ 9896 ID 4	-246004	259586
▫ 21111	-248766	255438

SOLUTION

Aquifer Model: Unconfined   Solution Method: Theis

T   = 5765.1 ft²/day   S   = 0.1285
Kz/Kr = 1.   b   = 78.5 ft