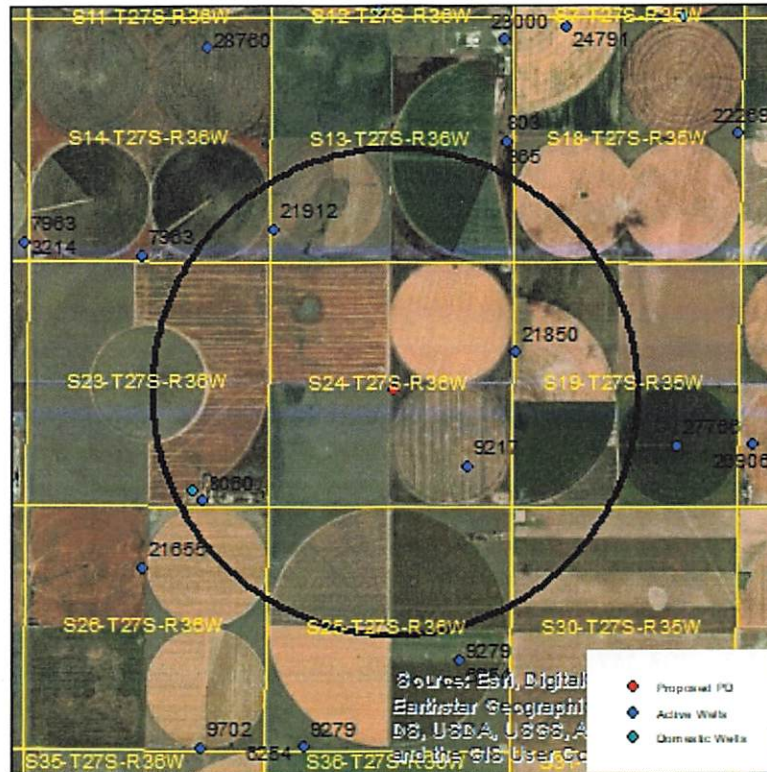


Evaluation of proposed move for Water Right No. 9217

Proposed: Move water right no. 9217 to a new well location, 2,285 ft to the northwest.



Wells within 1 mile: 21912, 8060, 21850, and a domestic well in section 23-27-36.

The saturated thickness at the proposed well location is estimated to be 170 ft, based upon the GMD3 model. For saturated thickness between 150 ft and 200 ft, the drawdown allowance is 3.5 ft.

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

$S = 0.1941$, $T = 3463 \text{ ft}^2/\text{day}$, $t_{p\text{current}} = 136 \text{ days}$, $Q_{\text{current}} = 372 \text{ gpm}$, $t_{p\text{proposed}} = 89 \text{ days}$, $Q_{\text{proposed}} = 1620 \text{ gpm}$

Theis drawdowns were calculated as follows:

21912:	Drawdown from current location = 1.75 ft
	Drawdown from proposed location = 6.52 ft
	Net drawdown = 4.8 ft
8060:	Drawdown from current location = 1.92 ft
	Drawdown from proposed location = 6.16 ft
	Net drawdown = 4.2 ft

21850: Drawdown from current location = 3.09 ft
Drawdown from proposed location = 8.74 ft
Net drawdown = 5.6 ft

Domestic 23-27-36: Drawdown from current location = 1.88 ft
Drawdown from proposed location = 6.09 ft
Net drawdown = 4.2 ft

Net drawdown exceeds the drawdown allowance of 3.5 ft for all wells within 1 mile of the proposed location. Critical well analysis is necessary on those wells.

Critical Well Evaluation:

21912:

Water Column = 158 ft

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

DE = 46.0 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DD = 3.1 ft ($S = 0.2648$, $T = 103,447$ gpd/ft, $Q = 120$ gpm, $tp = 132$ days, efficiency = 70%)

DT = 53.9 ft

Economic Drawdown Constraint (EDC) = $0.4 * 158$ ft = 63.2 ft

Physical Drawdown Constraint (PDC) = 158 ft – 60 ft = 98 ft

Total drawdown of 53.9 ft is less than the EDC and PDC, so this well is **not critical**.

8060:

Water Column = 171 ft

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

DE = 45.2 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DD = 17.0 ft ($S = 0.1873$, $T = 38,395$ gpd/ft, $Q = 250$ gpm, $tp = 146$ days, efficiency = 70%)

DT = 66.4 ft

Economic Drawdown Constraint (EDC) = $0.4 * 171$ ft = 68.4 ft

Physical Drawdown Constraint (PDC) = 171 ft – 60 ft = 111 ft

Total drawdown of 66.4 ft is less than the EDC and PDC, so this well is **not critical**.

21850:

Water Column = 166 ft

DP = 5.6 ft (Net drawdown from the proposal indicated above)

DE = 47.1 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DD = 39.6 ft ($S = 0.2259$, $T = 39,102$ gpd/ft, $Q = 621$ gpm, $tp = 79$ days, efficiency = 70%)

DT = 92.3 ft

Economic Drawdown Constraint (EDC) = $0.4 * 166$ ft = 66.4 ft

Physical Drawdown Constraint (PDC) = 166 ft – 60 ft = 106 ft

Total drawdown of 92.3 ft is greater than the EDC, so this well is **critical**.

Domestic 23-27-36:

Water Column = 171 ft

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

DE = 45.2 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DT = 49.4 ft

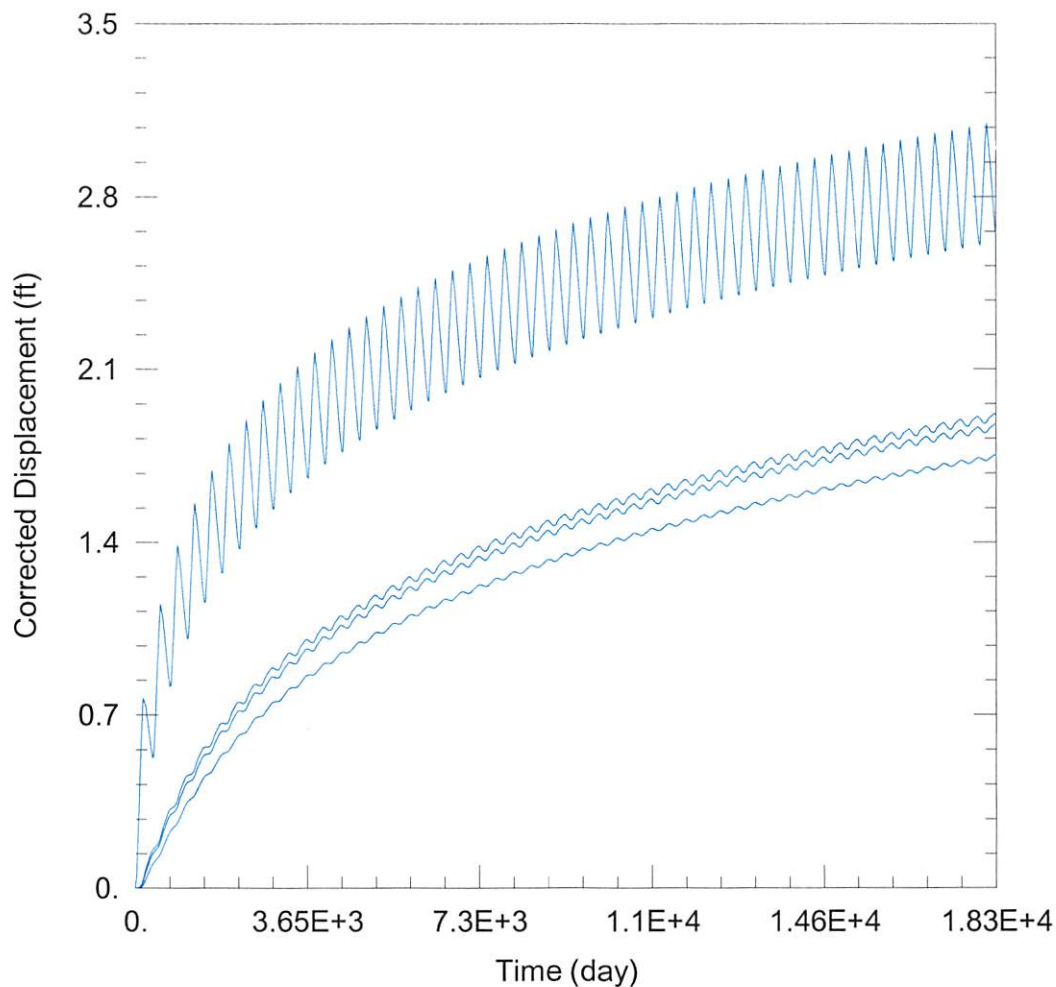
Economic Drawdown Constraint (EDC) = $0.4 * 171$ ft = 68.4 ft

Physical Drawdown Constraint (PDC) = 171 ft – 20 ft = 151 ft

Total drawdown of 49.4 ft is less than the EDC and PDC, so this well is **not critical**.

Conclusion:

The proposed move is in an area with less than 200 ft saturated thickness. The GMD3 model estimates declines slightly less than 2 ft/year over the next 25 years. If the proposed well were to pump its full authorized authority, there would likely be a noticeable drawdown effect on all neighboring wells. Critical well analysis shows that water right no. 21850 is critical because its available aquifer is declining at a rate of more than 40% over the next 25 years, considering the additional drawdown effect of the proposal and the drawdown required to sustain its current pumping rate and average use over the last 10 years. It is likely that this well will become much less productive over the next 25 years. Concerned neighbors may contact GMD3 at (620) 275-7147 or the Division of Water Resources at (620) 276-2901.



WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2022_moves\9217\9217 Current.aqt

Date: 06/13/22

Time: 14:58:41

PROJECT INFORMATION

Company: GMD 3

Project: 9217

Location: Grant County

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
9217	-116530	293502

Observation Wells

Well Name	X (ft)	Y (ft)
□	-116530	293502
□ 21912	-120762	298630
□ 8060	-122293	292756
□ 21850	-115516	295963
□ Domestic 23-27-36	-122524	292987

SOLUTION

Aquifer Model: Unconfined

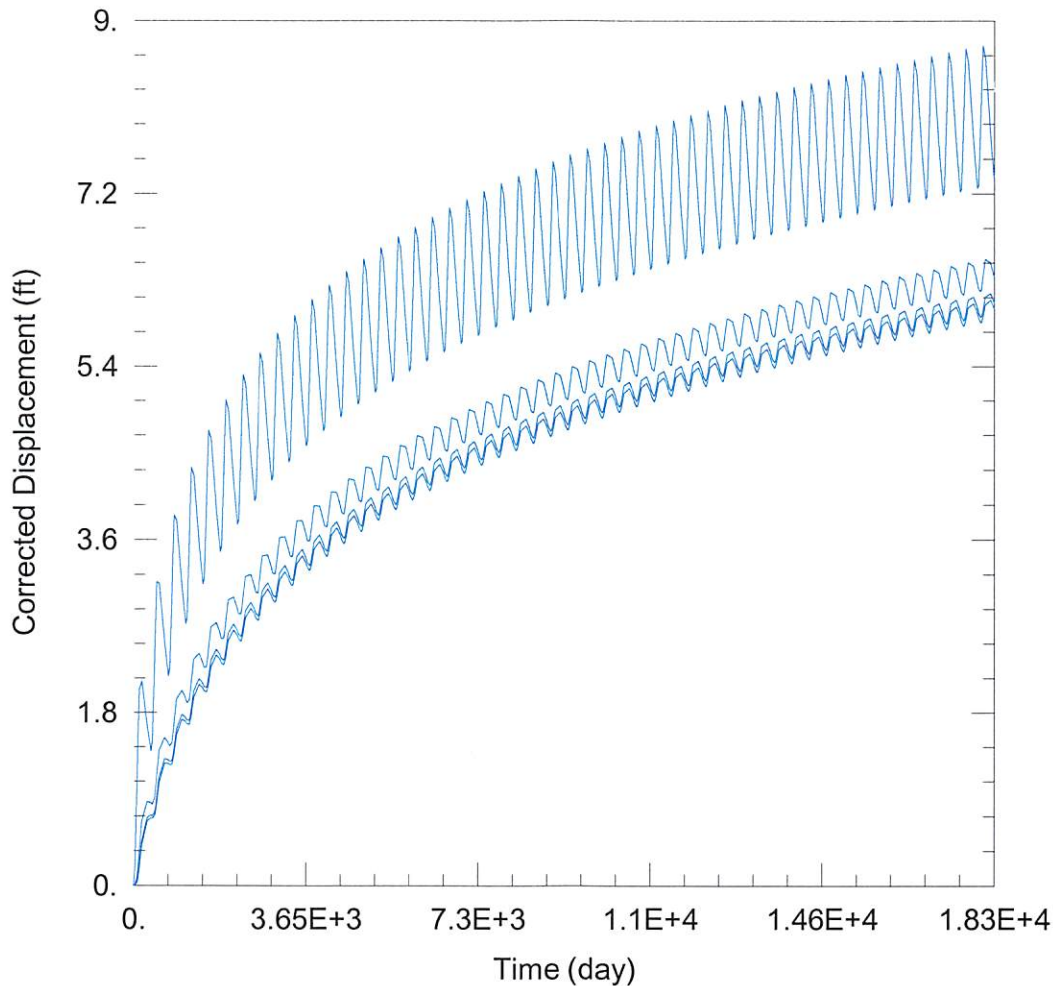
Solution Method: Theis

T = 3463. ft²/day

S = 0.1941

Kz/Kr = 1.

b = 170. ft



WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2022_moves\9217\9217 Proposed.aqt

Date: 06/13/22

Time: 14:58:07

PROJECT INFORMATION

Company: GMD 3

Project: 9217

Location: Grant County

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
9217	-118126	295137

Observation Wells

Well Name	X (ft)	Y (ft)
□	-118126	295137
□ 21912	-120762	298630
□ 8060	-122293	292756
□ 21850	-115516	295963
□ Domestic 23-27-36	-122524	292987

SOLUTION

Aquifer Model: Unconfined

Solution Method: Theis

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