Evaluation of proposed move for Water Right Nos 26312 ID 1 and 26312 ID 2.

Proposed: Move water right no. 26312 ID 1 to the well location currently authorized under 26312 ID 2, 2,762 ft to the northwest. Move water right no. 26312 ID 2 to a new well location a distance of 2,600 ft to the northwest. This move requires a waiver of rules, as 26312 ID 1 is proposed to move further than ½ mile. Water rights 26312 ID 1 and 26312 ID 2 are limited to a combined rate and quantity of 1655 gpm and 1260 AF, so this move was evaluated by using combined rate and quantity from a geocenter located between the two wells.

Wells within 1 mile: 26845 and a domestic well located in section 35-27-35.

The saturated thickness at the proposed well location is estimated to be 143 ft, based upon the driller's log and an observation well in section 25-27-35. For saturated thickness between 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:

$S = 0.2723$, $T = 5142.5$ ft^2/day, $tp_{current} = 271$ days, $Q_{current} = 600$ gpm, $tp_{proposed} = 172$ days, $Q_{proposed} = 1655$ gpm (Note that this is a combined rate of 2 wells.)

Theis drawdowns were calculated as follows:

26845:   Drawdown from current location = 4.02 ft

                                     Drawdown from proposed location = 7.58 ft

                                     Net drawdown = **3.6 ft**

Domestic 35-27-35:   Drawdown from current location = 6.71 ft

Drawdown from proposed location = 9.62 ft

Net drawdown = **2.9 ft**

Net drawdown exceeds the drawdown allowance of 3.0 ft water right no. 26845, so critical well analysis is necessary at that location.

Critical Well Evaluation:

26845:

Water Column = 143 ft (no driller's log, so assumed same as at proposed well location)

DP = 3.6 ft (Net drawdown from the proposal indicated above)

DE = 53 ft (Water level decline from 2021 through 2046 based upon GMD3 model)

DD = 10.2 ft (S = 0.2658, T = 113,215 gpd/ft, Q = 425 gpm, tp = 128 days, efficiency = 70%)

DT = 66.8 ft

Economic Drawdown Constraint (EDC) = 0.4 * 143 ft = 57.2 ft

Physical Drawdown Constraint (PDC) = 143 ft – 60 ft = 83 ft

Total drawdown of 66.8 ft is greater than the EDC, so this well **is critical.**

Conclusion:

The proposed moves are located in an area with depleted aquifer and if the new well is operated at the proposed rate and quantity, it is likely to create noticeable effects on neighboring water right no. 26845. GMD3 staff recommends a combined rate and quantity limitation of 1200 gpm and a 1161 AF for water right nos. 26312 ID 1 and 26312 ID 2. This would limit the well-to-well effect on water right no. 26845 to 3.0 ft.
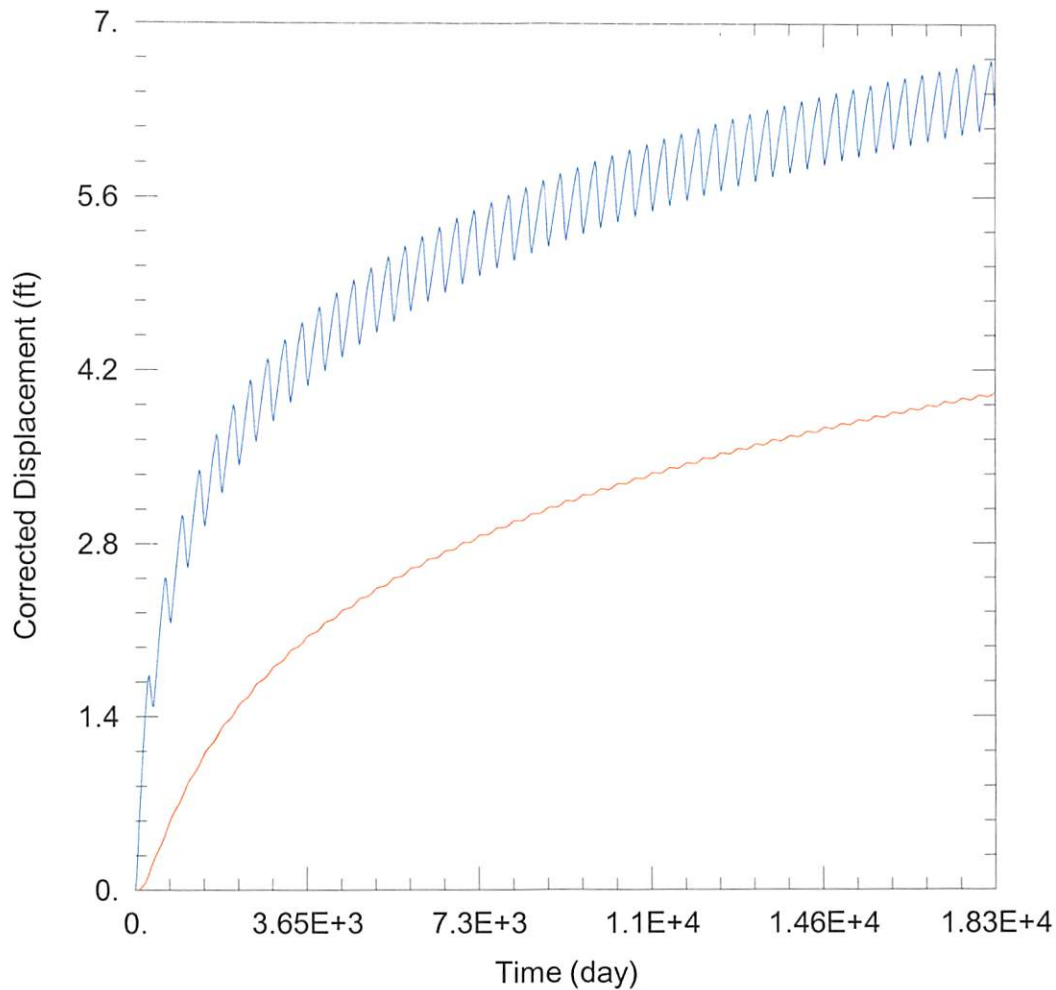
WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2021_Moves\26312\Geocenter Current.aqt
Date: 03/04/21   Time: 15:04:56

PROJECT INFORMATION

Company: GMD 3
Project: 26312
Location: Grant County
Test Well: 26312

WELL DATA

Pumping Wells				Observation Wells		
Well Name	X (ft)	Y (ft)		Well Name	X (ft)	Y (ft)
Geocenter	-90814	284621		□	-90814	284621
				□ 26845	-87488	289905
				□ Domestic 35-27-35	-89878	282345

SOLUTION

Aquifer Model: Unconfined   Solution Method: Theis
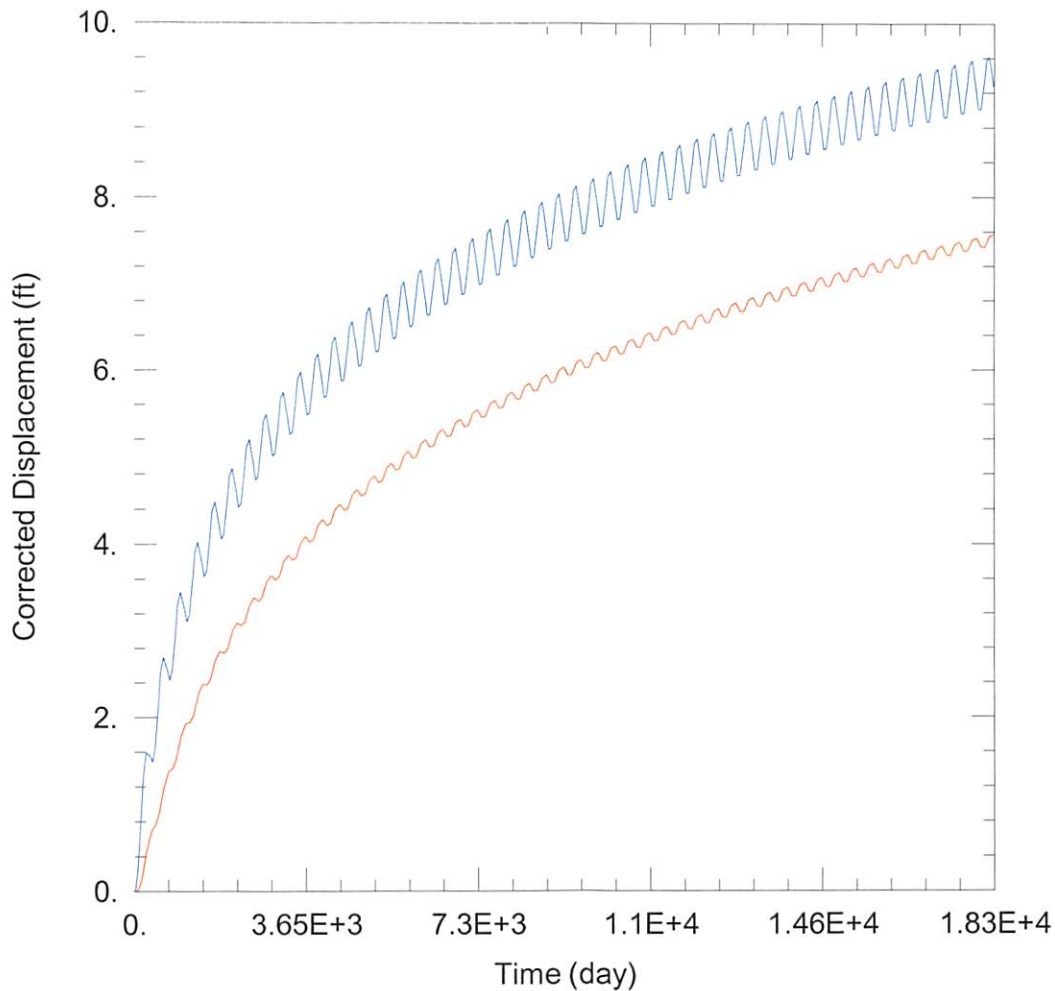
T   = 5142.5 ft^2/day   S   = 0.2723
Kz/Kr = 1.   b   = 143. ft

WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2021_Moves\26312\Geocenter Proposed.aqt
Date: 03/04/21   Time: 15:05:05

PROJECT INFORMATION

Company: GMD 3
Project: 26312
Location: Grant County
Test Well: 26312

WELL DATA

Pumping Wells				Observation Wells		
Well Name	X (ft)	Y (ft)		Well Name	X (ft)	Y (ft)
Geocenter	-91311	285822		▫	-91311	285822
				▫ 26845	-87488	289905
				▫ Domestic 35-27-35	-89878	282345

SOLUTION

Aquifer Model: Unconfined   Solution Method: Theis

$T = 5142.5$ ft^2/day $S = 0.2723$
$K_z/K_r = 1.$ $b = 143.$ ft