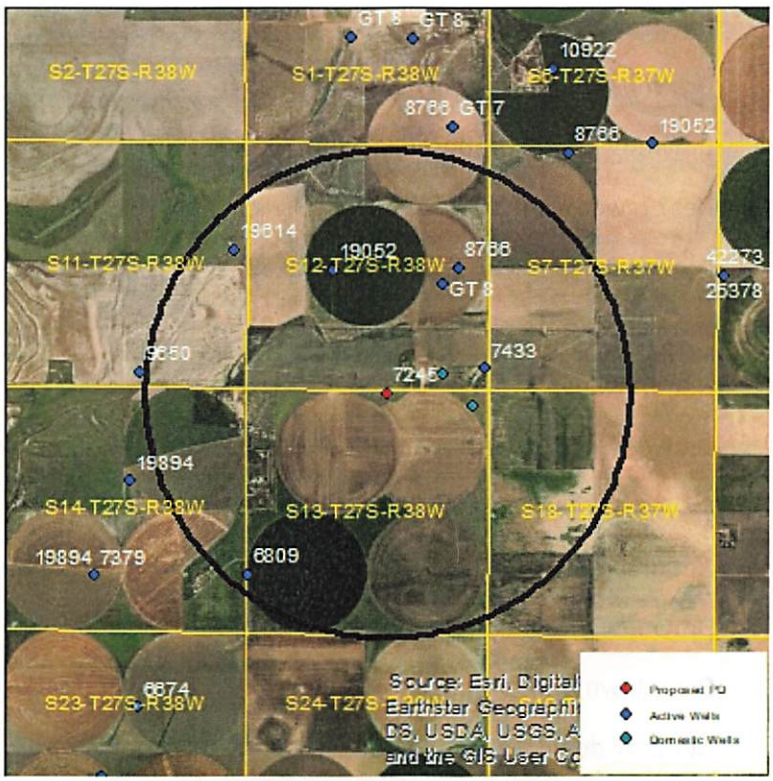
Evaluation of proposed move for Water Right Nos. 7245 & 7433

Proposed: Move water right no. 7245 to the well location currently authorized under water right no. 7433. Move water right no. 7433 to the well location currently authorized under water right no. 7245. These wells do not meet spacing rules to each other and a waiver to spacing rules will be needed to process the application.



Wells within 1 mile: 19614, 19052, 8766, 7433, 6809, a domestic well in section 12-27-38, and a domestic well in section 13-27-38.

The saturated thickness at the proposed well location is estimated to be 60 ft, based upon the GMD3 model. Estimated saturated thicknesses in the area range from 40 ft to 60 ft. For saturated thickness less than 40 ft, the drawdown allowance is 1.0 ft. For saturated thickness between 50 ft and 75 ft, the drawdown allowance is 1.5 ft.

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

$S = 0.1935$, $T = 2324\ ft^2/day$, $tp_{current} = 206$ days, $Q_{current} = 539$ gpm, $tp_{proposed} = 282$ days, $Q_{proposed} = 539$ gpm

Theis drawdowns were calculated as follows:

19614: Drawdown from current location = 6.43 ft

Drawdown from proposed location = 8.77 ft

Net drawdown = **2.3 ft**

19052:	Drawdown from current location = 8.37 ft
	Drawdown from proposed location = 11.29 ft
	Net drawdown = **2.9 ft**
8766:	Drawdown from current location = 8.05 ft
	Drawdown from proposed location = 10.90 ft
	Net drawdown = **2.8 ft**
7433:	Drawdown from current location = 9.83 ft
	Drawdown from proposed location = 13.09 ft
	Net drawdown = **3.3 ft**
6809:	Drawdown from current location = 6.12 ft
	Drawdown from proposed location = 8.34 ft
	Net drawdown = **2.2 ft**
Domestic 12-27-38:	Drawdown from current location = 12.92 ft
	Drawdown from proposed location = 16.54 ft
	Net drawdown = **3.6 ft**
Domestic 13-27-38:	Drawdown from current location = 10.61 ft
	Drawdown from proposed location = 13.99 ft
	Net drawdown = **3.4 ft**

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

Critical Well Evaluation:

19614:

Water Column = 42 ft

DP = 2.3 ft (Net drawdown from the proposal indicated above)

DE = 12.6 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DD = 0 ft (Well has not operated in the last 10 years.)

DT = 14.9 ft

Economic Drawdown Constraint (EDC) = 0.4 * 42 ft = 16.8 ft

Physical Drawdown Constraint (PDC) = 60 ft – 60 ft = 0 ft

Total drawdown of 14.9 ft is greater than the PDC, so this well **is critical.**

19052:

Water Column = 40 ft

DP = 2.9 ft (Net drawdown from the proposal indicated above)

DE = 7.5 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DD = 141.6 ft (S = 0.2086, T = 1335.5 ft^2/day, Q = 600 gpm, tp = 126 days, efficiency = 70%)

DT = 152.0 ft

Total drawdown exceeds the remaining saturated thickness, so this well **is critical.**

8766:

Water Column = 40 ft

DP = 2.8 ft (Net drawdown from the proposal indicated above)

DE = 7.5 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DD = 65.7 ft (S = 0.2086, T = 1335.5 ft^2/day, Q = 300 gpm, tp = 46 days, efficiency = 70%)

DT = 76.0 ft

Total drawdown exceeds the remaining saturated thickness, so this well **is critical.**

7433:

Water Column = 40 ft

DP = 3.3 ft (Net drawdown from the proposal indicated above)

DE = 7.5 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DD = 35.4 ft (S = 0.2086, T = 1335.5 ft^2/day, Q = 150 gpm, tp = 130 days, efficiency = 70%)

DT = 46.2 ft

Total drawdown is greater than the remaining saturated thickness, so this well **is critical.**

6809:

Water Column = 60 ft

DP = 2.2 ft (Net drawdown from the proposal indicated above)

DE = 7.6 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DD = 28.4 ft (S = 0.1935, T = 2324 ft^2/day, Q = 200 gpm, tp = 131 days, efficiency = 70%)

DT = 38.2 ft

Economic Drawdown Constraint (EDC) = 0.4 * 60 ft = 24.0 ft

Physical Drawdown Constraint (PDC) = 60 ft – 60 ft = 0 ft

Total drawdown of 38.2 ft is greater than the PDC, so this well **is critical.**

Domestic 12-27-38:

Water Column = 40 ft

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

DE = 7.5 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 11.1 ft

Economic Drawdown Constraint (EDC) = 0.4 * 40 ft = 16.0 ft

Physical Drawdown Constraint (PDC) = 40 ft – 20 ft = 20.0 ft

Total drawdown of 11.1 ft is less than the EDC and PDC, so this well **is not critical.**

Domestic 13-27-38:

Water Column = 60 ft

DP = 3.4 ft (Net drawdown from the proposal indicated above)

DE = 7.6 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DT = 11.0 ft

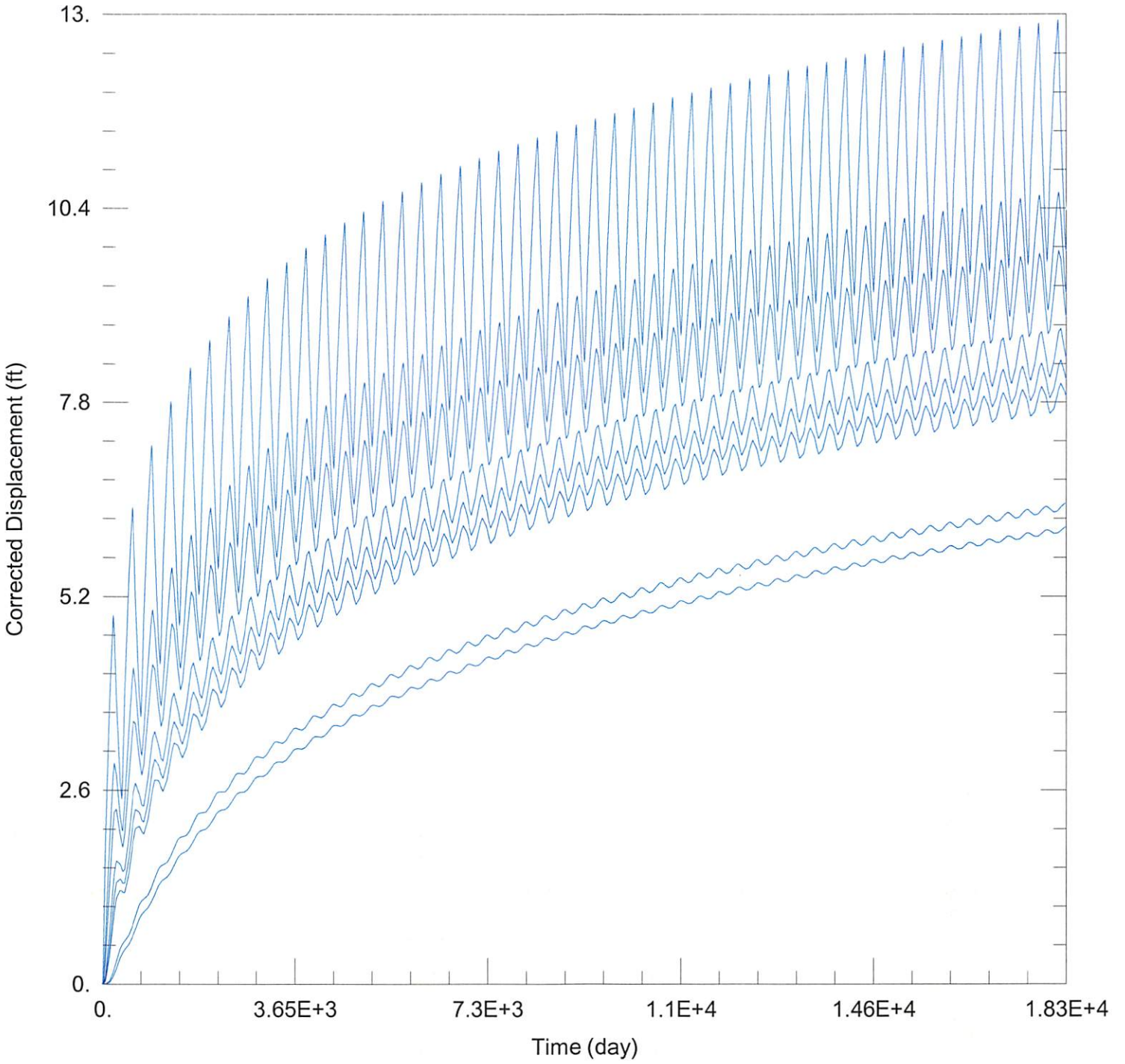
Economic Drawdown Constraint (EDC) = 0.4 * 60 ft = 24.0 ft

Physical Drawdown Constraint (PDC) = 60 ft – 20 ft = 40.0 ft

Total drawdown of 11.0 ft is less than the EDC and PDC, so this well **is not critical.**

Conclusion:

The proposed move is in a depleted aquifer area with little remaining saturated thickness. In some cases, modeled aquifer properties require well drawdowns in excess of remaining saturated thickness to achieve observed pumping rates. This indicates that the model is inaccurate with remaining saturated thickness, transmissivity, or both. There are very few driller's logs available in the area, so GMD3 was not able to update the modeled numbers to something more accurate. This is likely why the modeled values are inaccurate. The proposal does not include drilling any new wells. Authority on the well currently authorized by water right no. 7245 will increase from 608 AF to 672 AF, and authority on the well currently authorized by water right no. 7433 will decrease from 672 AF to 608 AF. It is unlikely that water use on either well will change significantly, but use on the southwest well is likely to be increased in very dry years. 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\trevora\Documents\2023_moves\7245_7433\7245 & 7433 Current.aqt
Date: 04/04/23 Time: 15:58:34

PROJECT INFORMATION

Company: GMD 3
Project: 7245 & 7433
Location: Grant County

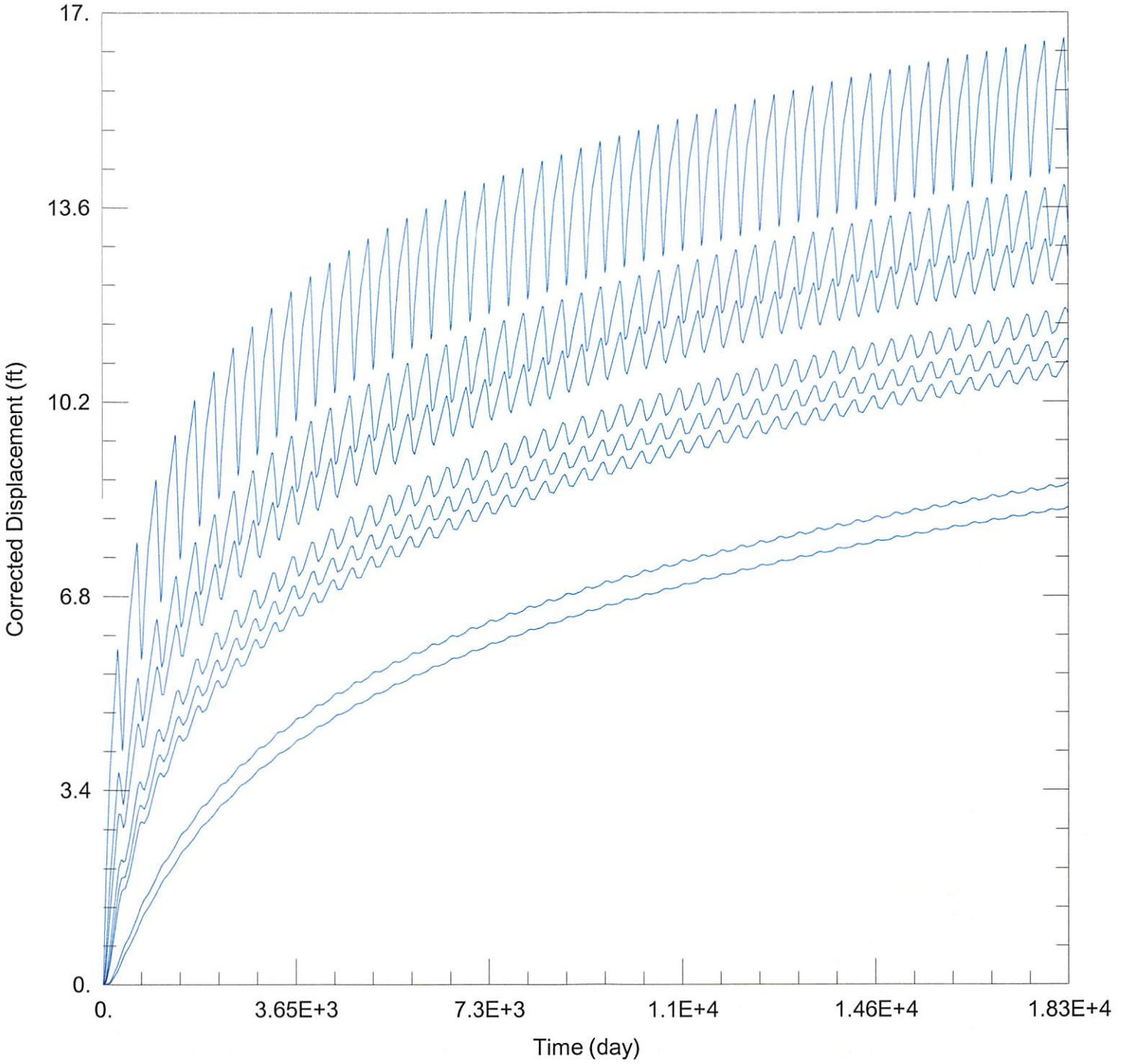
WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
7245	-181052	303517

Observation Wells

Well Name	X (ft)	Y (ft)
□	-181052	303517



WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2023_moves\7245_7433\7245 & 7433 Proposed.aqt
Date: 04/04/23 Time: 15:58:23

PROJECT INFORMATION

Company: GMD 3
Project: 7245 & 7433
Location: Grant County

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
7245	-181052	303517

Observation Wells

Well Name	X (ft)	Y (ft)
□	-181052	303517