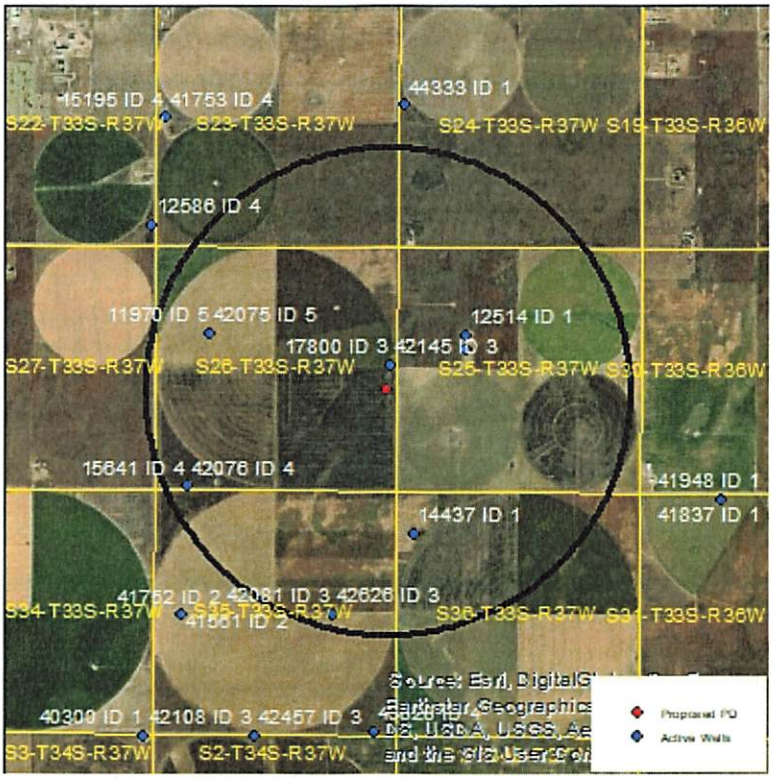
Evaluation of proposed move for Water Right Nos. 17800 & 42145

Proposed: Move water right nos. 17800 & 42145 to a new well location, 561 ft to the southwest.



Wells within 1 mile: 11970 & 42075, 15641 & 42076, 12514 ID1, 12514 ID2, 42081 & 42626, and 14437.

The saturated thickness at the proposed well location is estimated to be 343 ft, based upon the GMD3 model. For saturated thickness greater than 200 ft, the drawdown allowance is 4.0 ft.

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

S = 0.124, T = 3116 ft^2/day, $tp_{current}$ = 79 days, $Q_{current}$ = 100 gpm, $tp_{proposed}$ = 123 days, $Q_{proposed}$ = 650 gpm

Theis drawdowns were calculated as follows:

11970 & 42075: Drawdown from current location = 0.47 ft

Drawdown from proposed location = 4.67 ft

Net drawdown = **4.2 ft**

15641 & 42076: Drawdown from current location = 0.40 ft

Drawdown from proposed location = 4.20 ft

Net drawdown = **3.8 ft**

12514 ID1:	Drawdown from current location = 0.83 ft
	Drawdown from proposed location = 7.08 ft
	Net drawdown = **6.2 ft**
12514 ID2:	Drawdown from current location = 0.87 ft
	Drawdown from proposed location = 7.49 ft
	Net drawdown = **6.6 ft**
42081 & 42626:	Drawdown from current location = 0.38 ft
	Drawdown from proposed location = 4.13 ft
	Net drawdown = **3.7 ft**
14437:	Drawdown from current location = 0.49 ft
	Drawdown from proposed location = 5.44 ft
	Net drawdown = **4.9 ft**

Net drawdown exceeds the drawdown allowance of 4.0 ft for the wells authorized under water right nos. 11970 & 42075, 12514 ID1, 12514 ID2, and 14437. Critical well analysis was conducted for those wells.

Critical Well Evaluation:

11970 & 42075:

Water Column = 343 ft

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

DE = 26.6 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DD = 42.4 ft (S = 0.124, T = 3116 ft^2/day, Q = 389 gpm, tp = 97 days, efficiency = 70%)

DT = 73.2 ft

Economic Drawdown Constraint (EDC) = 0.4 * 343 ft = 137.2 ft

Physical Drawdown Constraint (PDC) = 343 ft – 60 ft = 283.0 ft

Total drawdown of 73.2 is less than the EDC and PDC, so this well **is not critical.**

12514 ID1:

Water Column = 339 ft

DP = 6.2 ft (Net drawdown from the proposal indicated above)

DE = 22.9 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DD = 151.0 ft (S = 0.1758, T = 394.7 ft^2/day, Q = 199 gpm, tp = 174 days, efficiency = 70%)

DT = 180.1 ft

Economic Drawdown Constraint (EDC) = 0.4 * 339 ft = 135.6 ft

Physical Drawdown Constraint (PDC) = 339 ft – 60 ft = 279.0 ft

Total drawdown of 180.1 ft is greater than the EDC, so this well **is critical.**

12514 ID2:

Water Column = 339 ft

DP = 6.6 ft (Net drawdown from the proposal indicated above)

DE = 22.9 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DD = 145.3 ft (S = 0.1758, T = 394.7 ft^2/day, Q = 199 gpm, tp = 105 days, efficiency = 70%)

DT = 174.8 ft

Economic Drawdown Constraint (EDC) = 0.4 * 339 ft = 135.6 ft

Physical Drawdown Constraint (PDC) = 339 ft – 60 ft = 279.0 ft

Total drawdown of 174.8 ft is greater than the EDC, so this well **is critical.**

14437:

Water Column = 330 ft

DP = 4.9 ft (Net drawdown from the proposal indicated above)

DE = 40.6 ft (Water level decline from 2022 through 2047 based upon GMD3 model)

DD = 49.6 ft (S = 0.1391, T = 2367 ft^2/day, Q = 349 gpm, tp = 124 days, efficiency = 70%)

DT = 95.1 ft

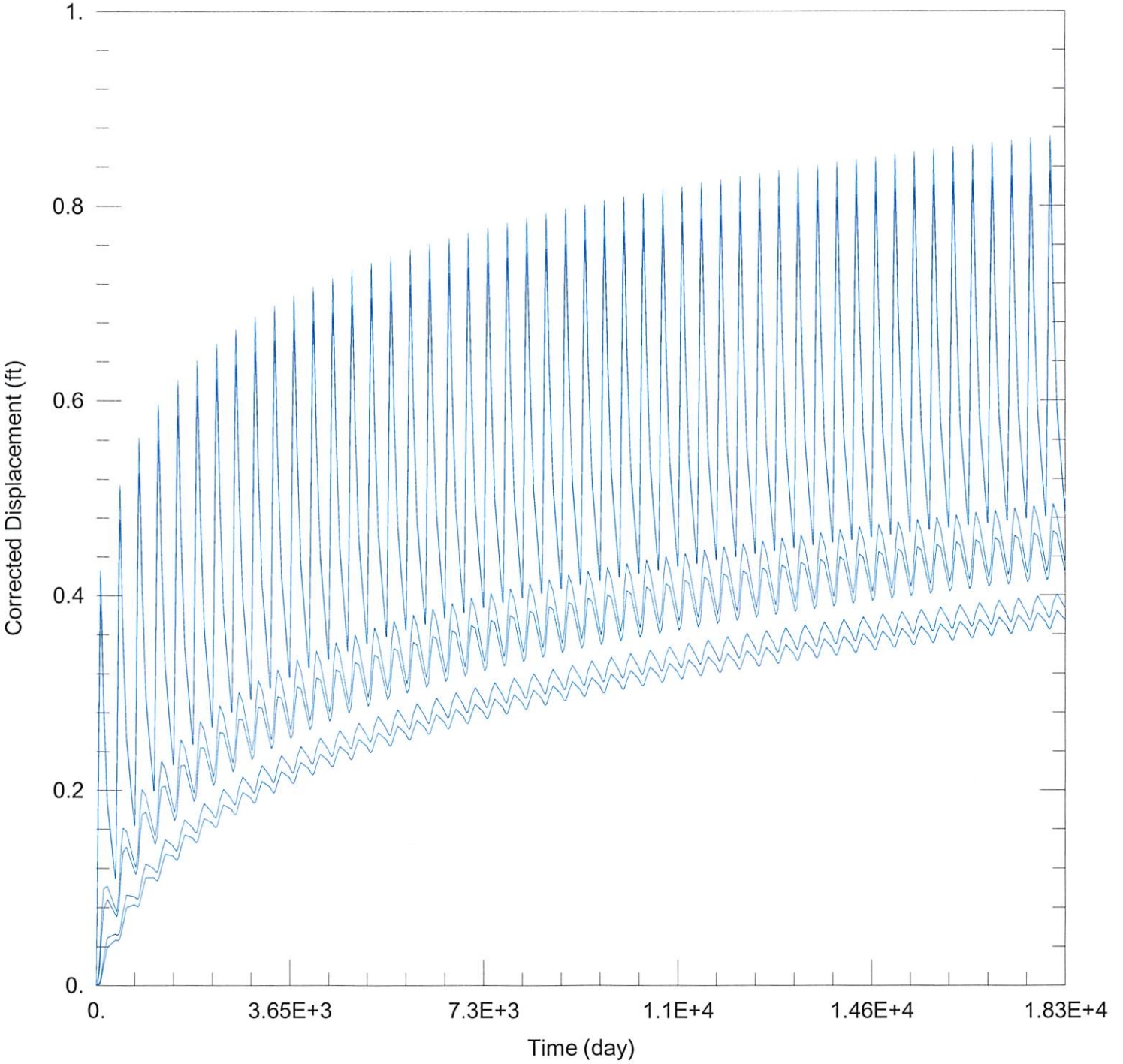
Economic Drawdown Constraint (EDC) = 0.4 * 330 ft = 132.0 ft

Physical Drawdown Constraint (PDC) = 330 ft – 60 ft = 270.0 ft

Total drawdown of 95.1 ft is less than the EDC and PDC, so this well **is not critical.**

Conclusion:

The proposed move is in an area with more than 300 ft saturated thickness, but some neighboring wells are in aquifer with somewhat poor pumping conditions. Modeled aquifer properties require well drawdown of about 150 ft to achieve observed pumping rates and quantities in section 25-33-37, indicating that wells in that section are likely to experience diminished pumping capacity over the near future with the projected aquifer decline rate. If the proposed well is operated at its fully authorized rate and quantity, it is likely to create a noticeable effect on those critical wells. The GMD3 model was created using well logs in the KGS Water Well Completion Records Database, which shows only one well in section 25, drilled only 260 ft deep, so it is plausible that aquifer conditions are better in that section than the model indicates. 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\17800_42145\17800 & 42145 Current.aqt
Date: 02/17/23 Time: 14:29:49

PROJECT INFORMATION

Company: GMD 3
Project: 17800 & 42145
Location: Stevens County

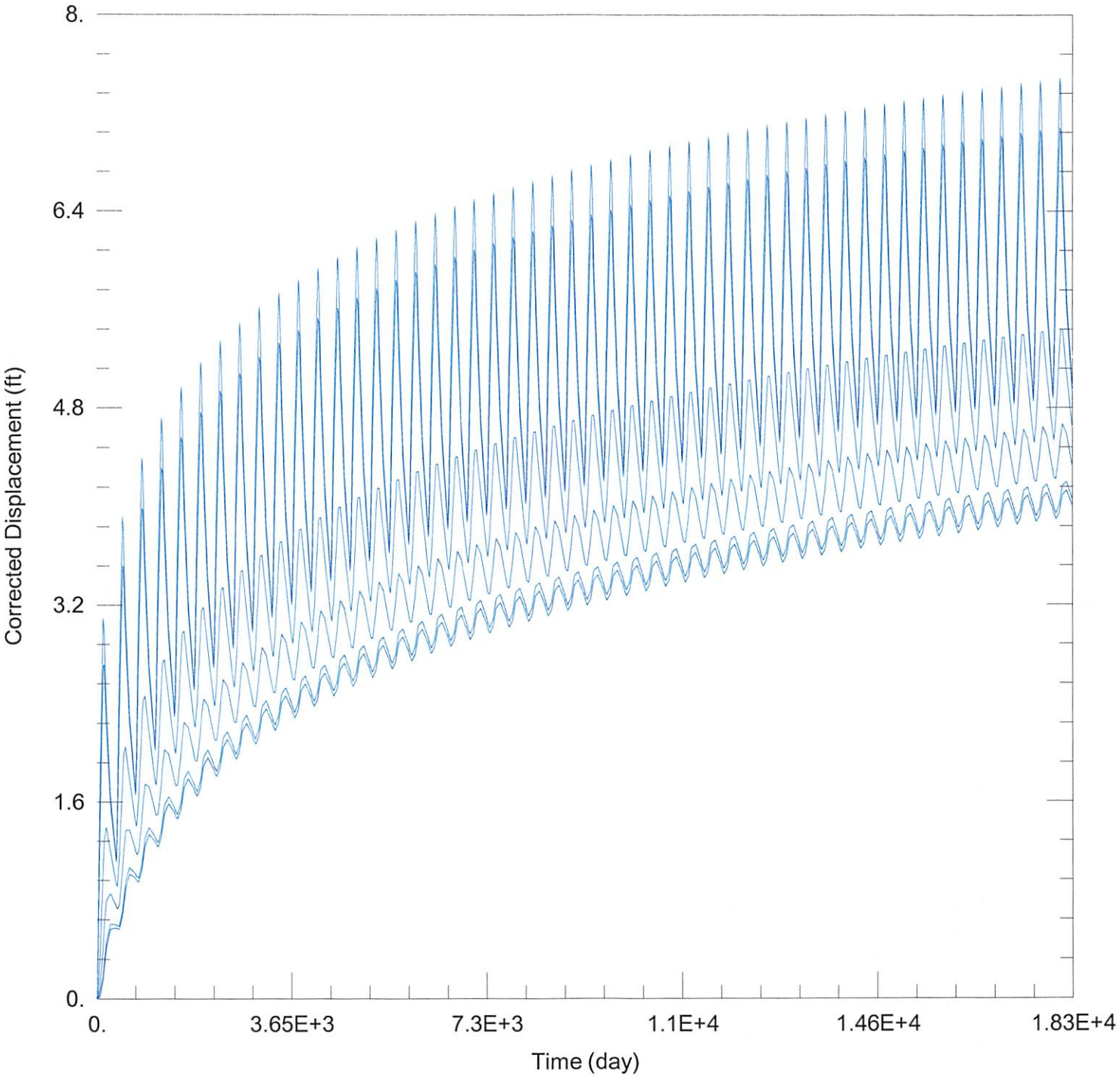
WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
17800 & 42145	-146800	99953

Observation Wells

Well Name	X (ft)	Y (ft)
□	-146800	99953



WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2023_moves\17800_42145\17800 & 42145 Proposed.aqt
Date: 02/17/23 Time: 14:29:42

PROJECT INFORMATION

Company: GMD 3
Project: 17800 & 42145
Location: Stevens County

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
17800 & 42145	-146872	99396

Observation Wells

Well Name	X (ft)	Y (ft)
□	-146872	99396