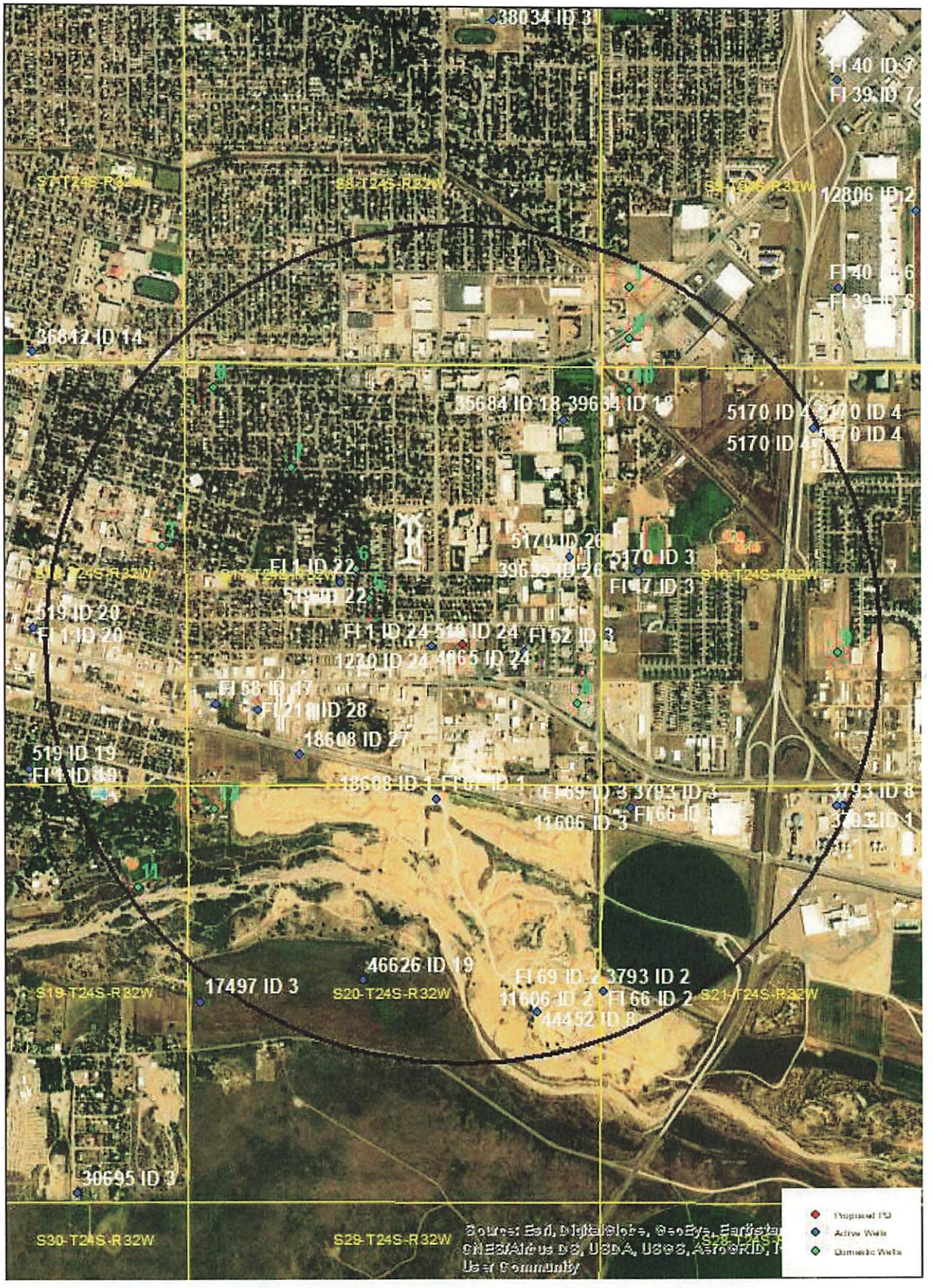
Evaluation of proposed move for Water Right Nos. FI 1 & 519 & 1230 & 4665 ID24

Proposed: Move water right nos. FI1 & 519 & 1230 & 4665 ID24 to a new well location, 395 ft to the east.


38034 ID 3
FI 40 ID 7
FI 39 ID 7
S18-T24S-R32W
S19-T24S-R32W
12806 ID 2
FI 40 ID 6
FI 39 ID 6
36612 ID 14
35684 ID 18
39634 ID 18
5170 ID 4
5170 ID 4
5170 ID 4
5170 ID 4
5170 ID 26
FI 1 ID 22
5170 ID 3
FI 7 ID 3
S19-T24S-R32W
519 ID 20
FI 1 ID 20
FI 1 ID 24
519 ID 24
FI 52 ID 3
1270 ID 24
4865 ID 24
FI 58 ID 17
FI 21 ID 28
18608 ID 27
519 ID 19
FI 1 ID 19
18608 ID 1
FI 1 ID 1
FI 69 ID 3
3793 ID 3
FI 66 ID 3
11606 ID 3
3793 ID 8
3793 ID 1
46626 ID 19
17497 ID 3
S20-T24S-R32W
FI 69 ID 2
3793 ID 2
11606 ID 2
FI 66 ID 2
S21-T24S-R32W
44452 ID 8
30695 ID 3
S30-T24S-R32W
S29-T24S-R32W
Source: Esri, DigitalGlobe, GeoEye, Earthstar
Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID,
User Community
Proposed PD
Active Wells
Domestic Wells

Wells within 1 mile: FI 1 & 519 & 1230 & 4665 ID22, 35684 & 39634, 5170 & 39635, FI 52, FI 58, FI 218, 18608, FI 48, FI 47 & 5170 ID3, FI 47 & 5170 ID4, 46626, FI 67 & 18608, 44452, FI 66 & FI 69 & 3793 & 11606 ID2, FI 66 & FI 69 & 3793 & 11606 battery, and twelve domestic wells, numbered on the above map.

The saturated thickness at the proposed well location is estimated to be 143 ft, based upon the GMD3 model. For saturated thickness between than 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 = 0.2444, T = 20,340 ft^2/day, $tp_{current}$ = 219 days, $Q_{current}$ = 94 gpm, $tp_{proposed}$ = 219 days, $Q_{proposed}$ = 930 gpm

Theis drawdowns were calculated as follows:

FI 1 & 519 & 1230 & 4665 ID22:	Drawdown from current location = 0.39 ft
	Drawdown from proposed location = 3.57 ft
	Net drawdown = **3.2 ft**
35684 & 39634:	Drawdown from current location = 0.27 ft
	Drawdown from proposed location = 2.79 ft
	Net drawdown = **2.5 ft**
5170 & 39635:	Drawdown from current location = 0.33 ft
	Drawdown from proposed location = 3.55 ft
	Net drawdown = **3.2 ft**
FI 52:	Drawdown from current location = 0.41 ft
	Drawdown from proposed location = 4.65 ft
	Net drawdown = **4.2 ft**
FI 58:	Drawdown from current location = 0.29 ft
	Drawdown from proposed location = 2.75 ft
	Net drawdown = **2.5 ft**
FI 218:	Drawdown from current location = 0.32 ft
	Drawdown from proposed location = 2.96 ft
	Net drawdown = **2.6 ft**

18608:	Drawdown from current location = 0.33 ft
	Drawdown from proposed location = 3.08 ft
	Net drawdown = **2.7 ft**
FI 48:	Drawdown from current location = 0.32 ft
	Drawdown from proposed location = 3.45 ft
	Net drawdown = **3.1 ft**
FI 47 & 5170 ID3:	Drawdown from current location = 0.30 ft
	Drawdown from proposed location = 3.12 ft
	Net drawdown = **2.8 ft**
FI 47 & 5170 ID4:	Drawdown from current location = 0.21 ft
	Drawdown from proposed location = 2.17 ft
	Net drawdown = **2.0 ft**
46626:	Drawdown from current location = 0.24 ft
	Drawdown from proposed location = 2.35 ft
	Net drawdown = **2.1 ft**
FI 67 & 18608:	Drawdown from current location = 0.35 ft
	Drawdown from proposed location = 3.39 ft
	Net drawdown = **3.0 ft**
44452:	Drawdown from current location = 0.23 ft
	Drawdown from proposed location = 2.27 ft
	Net drawdown = **2.0 ft**
FI 66 & FI 69 & 3793 & 11606 ID2:	Drawdown from current location = 0.23 ft
	Drawdown from proposed location = 2.27 ft
	Net drawdown = **2.0 ft**
FI 66 & FI 69 & 3793 & 11606 ID3:	Drawdown from current location = 0.28 ft
	Drawdown form proposed location = 2.85 ft
	Net drawdown = **2.6 ft**

FI 66 & FI 69 & 3793 & 11606 battery:	Drawdown from current location = 0.21 ft
	Drawdown from proposed location = 2.17 ft
	Net drawdown = **2.0 ft**
Domestic 1:	Drawdown from current location = 0.22 ft
	Drawdown from proposed location = 2.22 ft
	Net drawdown = **2.0 ft**
Domestic 2:	Drawdown from current location = 0.23 ft
	Drawdown from proposed location = 2.36 ft
	Net drawdown = **2.1 ft**
Domestic 3:	Drawdown from current location = 0.26 ft
	Drawdown from proposed location = 2.47 ft
	Net drawdown = **2.2 ft**
Domestic 4:	Drawdown from current location = 0.34 ft
	Drawdown from proposed location = 3.65 ft
	Net drawdown = **3.3 ft**
Domestic 5:	Drawdown from current location = 0.44 ft
	Drawdown from proposed location = 3.95 ft
	Net drawdown = **3.5 ft**
Domestic 6:	Drawdown from current location = 0.39 ft
	Drawdown from proposed location = 3.64 ft
	Net drawdown = **3.2 ft**
Domestic 7:	Drawdown from current location = 0.29 ft
	Drawdown from proposed location = 2.79 ft
	Net drawdown = **2.5 ft**
Domestic 8:	Drawdown from current location = 0.24 ft
	Drawdown from proposed location = 2.32 ft
	Net drawdown = **2.1 ft**

Domestic 9:	Drawdown from current location = 0.22 ft
	Drawdown from proposed location = 2.27 ft
	Net drawdown = **2.0 ft**
Domestic 10:	Drawdown from current location = 0.25 ft
	Drawdown from proposed location = 2.53 ft
	Net drawdown = **2.3 ft**
Domestic 11:	Drawdown from current location = 0.23 ft
	Drawdown from proposed location = 2.18 ft
	Net drawdown = **2.0 ft**
Domestic 12:	Drawdown from current location = 0.27 ft
	Drawdown from proposed location = 2.55 ft
	Net drawdown = **2.3 ft**

Net drawdown exceeds the drawdown allowance for the wells authorized under water right nos. FI 1 & 519 & 1230 & 4665 ID 22, 5170 & 39635, FI 52, FI 48, and the domestic wells labeled 4, 5, and 6 on the above map. Critical well analysis was performed for those wells.

Critical Well Evaluation:

FI 1 & 519 & 1230 & 4665 ID22:

Water Column = 143 ft

DP = 3.2 ft (Net drawdown from the proposal indicated above)

DE = 44.4 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DD = 0 ft (average use was only 0.1 AF)

DT = 47.6 ft

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

Physical Drawdown Constraint (PDC) = 143 ft – 60 ft = 83.0 ft

Total drawdown of 47.6 ft is less than the EDC and the PDC, so this well is **not critical.**

5170 & 39635:

Water Column = 143 ft

DP = 3.2 ft (Net drawdown from the proposal indicated above)

DE = 44.4 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DD = 1.7 ft (S = 0.2444, T = 20,340 ft^2/day, Q = 100 gpm, tp = 38 days, efficiency = 70%)

DT = 49.3 ft

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

Physical Drawdown Constraint (PDC) = 143 ft – 60 ft = 83.0 ft

Total drawdown of 49.3 ft is less than the EDC and the PDC, so this well **is not critical.**

FI 52:

Water Column = 143 ft

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

DE = 44.4 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DD = 0 ft (No recent use)

DT = 48.6 ft

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

Physical Drawdown Constraint (PDC) = 143 ft – 60 ft = 83.0 ft

Total drawdown of 48.6 ft is less than the EDC and the PDC, so this well **is not critical.**

FI 48:

Water Column = 143 ft

DP = 3.1 ft (Net drawdown from the proposal indicated above)

DE = 41.2 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DD = 0 ft (No recent use)

DT = 44.3 ft

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

Physical Drawdown Constraint (PDC) = 143 ft – 60 ft = 83.0 ft

Total drawdown of 44.3 ft is less than the EDC and the PDC, so this well **is not critical.**

Domestic 4:

Water Column = 143 ft

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

DE = 44.4 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DT = 47.7 ft

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

Physical Drawdown Constraint (PDC) = 143 ft – 20 ft = 123.0 ft

Total drawdown of 47.7 ft is less than the EDC and the PDC, so this well **is not critical.**

Domestic 5:

Water Column = 143 ft

DP = 3.5 ft (Net drawdown from the proposal indicated above)

DE = 44.4 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DT = 47.9 ft

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

Physical Drawdown Constraint (PDC) = 143 ft – 20 ft = 123.0 ft

Total drawdown of 47.9 ft is less than the EDC and the PDC, so this well **is not critical.**

Domestic 6:

Water Column = 143 ft

DP = 3.2 ft (Net drawdown from the proposal indicated above)

DE = 44.4 ft (Water level decline from 2024 through 2049 based upon GMD3 model)

DT = 47.6 ft

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

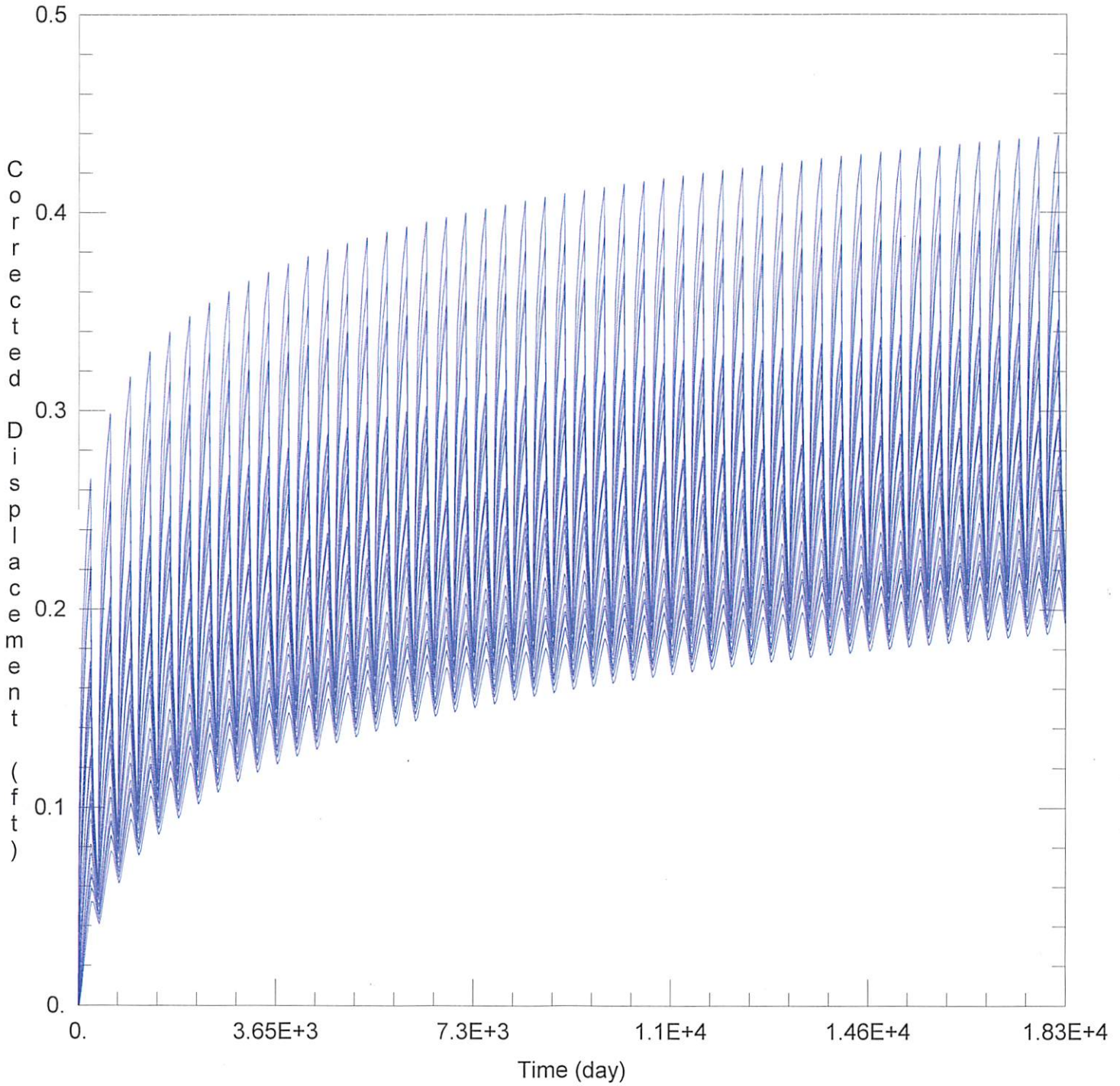
Physical Drawdown Constraint (PDC) = 143 ft – 20 ft = 123.0 ft

Total drawdown of 47.6 ft is less than the EDC and the PDC, so this well **is not critical.**

Conclusion:

The proposed move is in a highly developed aquifer area with about 140 ft of remaining saturated thickness. The analysis shows that net well-to-well effects created by this proposal are likely to be small but noticeable to the closest wells. No nearby wells were flagged as critical because the GMD3 model shows high transmissivity in the area, limiting well-to-well drawdown effects, and because most of the closest wells to the proposed point of diversion have been inactive for more than 10 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\FI1_519_1230_4665\FI 1 Current.aqt
Date: 02/28/24 Time: 15:12:32

PROJECT INFORMATION

Company: GMD 3
Project: FI 1 & 519 & 1230 & 4665
Location: Finney County

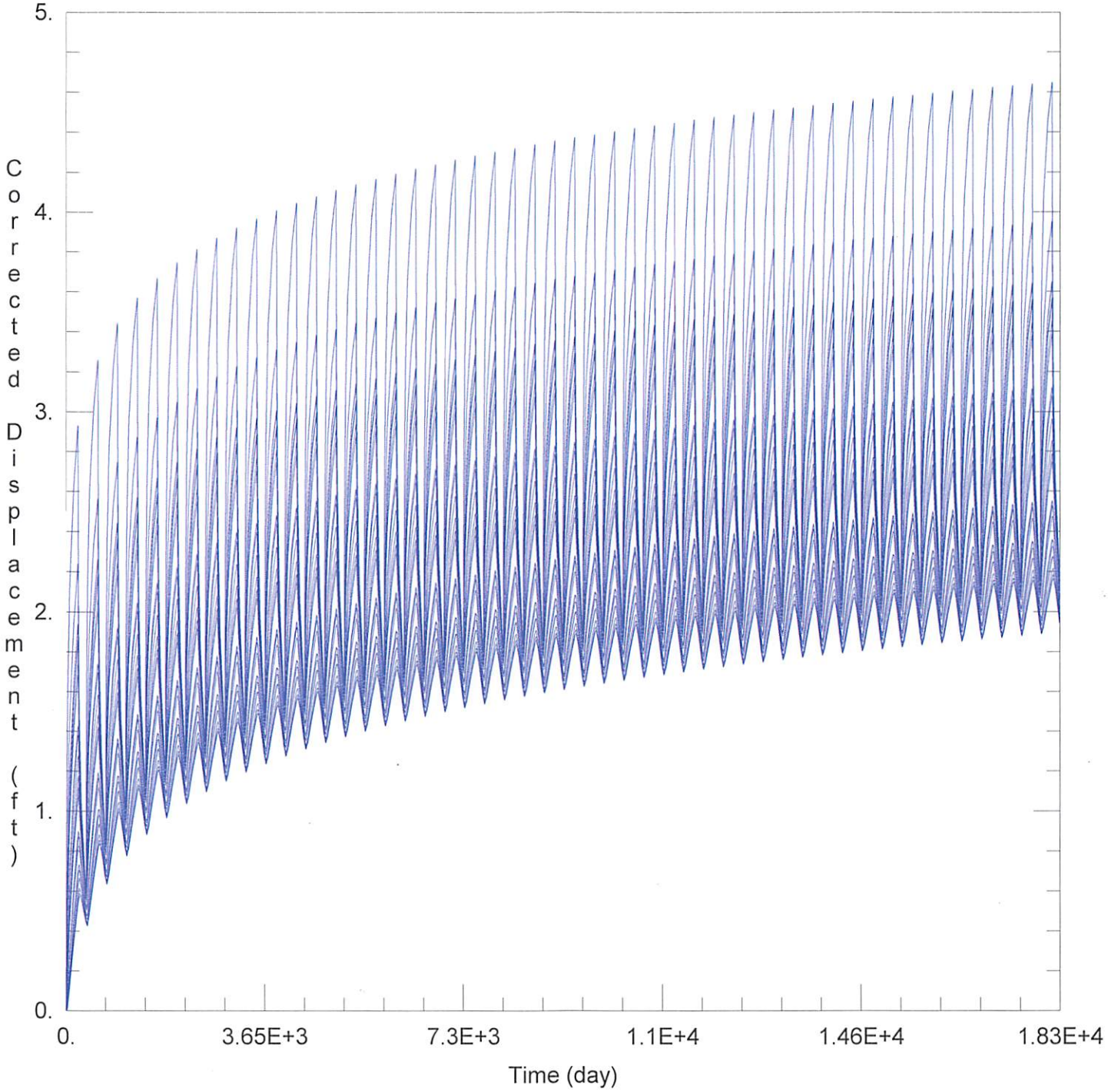
WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
FI 1 & 519 & 1230 & 4665 ID2	-15930	396975

Observation Wells

Well Name	X (ft)	Y (ft)
□	-15930	396975
□ FI 1 & 519 & 1230 & 4665 IT	-17083	397784



WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2023_moves\FI1_519_1230_4665\FI 1 Proposed.aqt
Date: 02/28/24 Time: 15:12:42

PROJECT INFORMATION

Company: GMD 3
Project: FI 1 & 519 & 1230 & 4665
Location: Finney County

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
FI 1 & 519 & 1230 & 4665 ID2	-15536	396999

Observation Wells

Well Name	X (ft)	Y (ft)
□	-15536	396999
□ FI 1 & 519 & 1230 & 4665 IT	-17083	397784