

## Evaluation of proposed move for Water Right No. FI 214

Proposed: Move water right no. FI 214 to a new well location, 1,675 ft to the northeast.



Wells within 1 mile: FI 204, 5565, FI 203, FI 122, FI 212 & 11518, 12681 & 14809, FI 125, 36872, 8731, FI 126 D1, FI 126 D2, 10712, and 19 domestic wells, numbered on the above map.

The saturated thickness at the proposed well location is estimated to be 187 ft, based upon the GMD3 model. For saturated thickness between than 150 ft and 200 ft, the drawdown allowance is 3.5 ft.

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

$S = 0.2705$ ,  $T = 7805 \text{ft}^2/\text{day}$ ,  $tp_{\text{current}} = 72$  days,  $Q_{\text{current}} = 450$  gpm,  $tp_{\text{proposed}} = 131$  days,  
 $Q_{\text{proposed}} = 1000$  gpm

These drawdowns were calculated as follows:

FI 204: Drawdown from current location = 1.21 ft  
 Drawdown from proposed location = 3.81 ft  
 Net drawdown = **2.6 ft**

5565: Drawdown from current location = 0.70 ft  
 Drawdown from proposed location = 2.83 ft  
 Net drawdown = **2.1 ft**

FI 203: Drawdown from current location = 0.81 ft  
Drawdown from proposed location = 3.80 ft  
Net drawdown = **3.0 ft**

FI 122: Drawdown from current location = 0.61 ft  
Drawdown from proposed location = 2.99 ft  
Net drawdown = **2.4 ft**

FI 212 & 11518: Drawdown from current location = 0.92 ft  
Drawdown from proposed location = 2.91 ft  
Net drawdown = **2.0 ft**

12681 & 14809: Drawdown from current location = 0.93 ft  
Drawdown from proposed location = 3.07 ft  
Net drawdown = **2.1 ft**

FI 125: Drawdown from current location = 0.65 ft  
Drawdown from proposed location = 3.25 ft  
Net drawdown = **2.6 ft**

36872: Drawdown from current location = 0.69 ft  
Drawdown from proposed location = 3.50 ft  
Net drawdown = **2.8 ft**

8731: Drawdown from current location = 0.66 ft  
Drawdown from proposed location = 3.25 ft  
Net drawdown = **2.6 ft**

FI 126 D1: Drawdown from current location = 0.58 ft  
Drawdown from proposed location = 2.78 ft  
Net drawdown = **2.2 ft**

FI 126 D2: Drawdown from current location = 0.59 ft  
Drawdown from proposed location = 2.81 ft  
Net drawdown = **2.2 ft**

10712: Drawdown from current location = 0.67 ft  
Drawdown from proposed location = 3.10 ft  
Net drawdown = **2.4 ft**

Domestic 1: Drawdown from current location = 0.86 ft  
Drawdown from proposed location = 5.03 ft  
Net drawdown = **4.2 ft**

Domestic 2: Drawdown from current location = 0.96 ft  
Drawdown from proposed location = 3.61 ft  
Net drawdown = **2.6 ft**

Domestic 3: Drawdown from current location = 1.29 ft  
Drawdown from proposed location = 7.00 ft  
Net drawdown = **5.7 ft**

Domestic 4: Drawdown from current location = 0.94 ft  
Drawdown from proposed location = 5.92 ft  
Net drawdown = **5.0 ft**

Domestic 5: Drawdown from current location = 1.11 ft  
Drawdown from proposed location = 7.01 ft  
Net drawdown = **5.9 ft**

Domestic 6: Drawdown from current location = 0.80 ft  
Drawdown from proposed location = 4.39 ft  
Net drawdown = **3.6 ft**

Domestic 7: Drawdown from current location = 1.46 ft  
Drawdown from proposed location = 3.84 ft  
Net drawdown = **2.4 ft**

Domestic 8: Drawdown from current location = 0.80 ft  
Drawdown from proposed location = 4.46 ft  
Net drawdown = **3.7 ft**

Domestic 9: Drawdown from current location = 0.91 ft  
Drawdown from proposed location = 5.54 ft  
Net drawdown = **4.6 ft**

Domestic 10: Drawdown from current location = 1.04 ft  
Drawdown from proposed location = 7.08 ft  
Net drawdown = **6.0 ft**

Domestic 11: Drawdown from current location = 1.34 ft  
Drawdown from proposed location = 7.27 ft  
Net drawdown = **5.9 ft**

Domestic 12: Drawdown from current location = 0.84 ft  
Drawdown from proposed location = 2.87 ft  
Net drawdown = **2.0 ft**

Domestic 13: Drawdown from current location = 4.51 ft  
Drawdown from proposed location = 5.95 ft  
Net drawdown = **1.4 ft**

Domestic 14: Drawdown from current location = 2.03 ft  
Drawdown from proposed location = 7.08 ft  
Net drawdown = **5.0 ft**

Domestic 15: Drawdown from current location = 0.71 ft  
Drawdown from proposed location = 3.51 ft  
Net drawdown = **2.8 ft**

Domestic 16: Drawdown from current location = 0.71 ft  
Drawdown from proposed location = 3.61 ft  
Net drawdown = **2.9 ft**

Domestic 17: Drawdown from current location = 0.66 ft  
Drawdown from proposed location = 3.22 ft  
Net drawdown = **2.6 ft**

Domestic 18: Drawdown from current location = 0.73 ft  
Drawdown from proposed location = 3.53 ft  
Net drawdown = **2.8 ft**

Domestic 19: Drawdown from current location = 0.68 ft  
Drawdown from proposed location = 3.41 ft  
Net drawdown = **2.7 ft**

Net drawdown exceeds the drawdown allowance of 3.5 ft for the wells identified on the map as Domestic 3, 4, 5, 6, 8, 9, 10, 11, and 14. Critical well analysis was conducted for those wells.

**Critical Well Evaluation:**

**Domestic 3:**

Water Column = 173 ft

DP = 5.7 ft (Net drawdown from the proposal indicated above)

DE = 45.0 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 50.7 ft

Economic Drawdown Constraint (EDC) =  $0.4 * 173 \text{ ft} = 69.2 \text{ ft}$

Physical Drawdown Constraint (PDC) =  $173 \text{ ft} - 20 \text{ ft} = 153 \text{ ft}$

Total drawdown of 50.7 ft is less than the EDC and the PDC, so this well is **not critical**.

**Domestic 4:**

Water Column = 173 ft

DP = 5.0 ft (Net drawdown from the proposal indicated above)

DE = 45.0 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 50.0 ft

Economic Drawdown Constraint (EDC) =  $0.4 * 173 \text{ ft} = 69.2 \text{ ft}$

Physical Drawdown Constraint (PDC) =  $173 \text{ ft} - 20 \text{ ft} = 153 \text{ ft}$

Total drawdown of 50.0 ft is less than the EDC and the PDC, so this well is **not critical**.

**Domestic 5:**

Water Column = 173 ft

DP = 5.9 ft (Net drawdown from the proposal indicated above)

DE = 45.0 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 50.9 ft

Economic Drawdown Constraint (EDC) =  $0.4 * 173 \text{ ft} = 69.2 \text{ ft}$

Physical Drawdown Constraint (PDC) =  $173 \text{ ft} - 20 \text{ ft} = 153 \text{ ft}$

Total drawdown of 50.9 ft is less than the EDC and the PDC, so this well is **not critical**.

**Domestic 6:**

Water Column = 173 ft

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

DE = 45.0 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 48.6 ft

Economic Drawdown Constraint (EDC) =  $0.4 * 173 \text{ ft} = 69.2 \text{ ft}$

Physical Drawdown Constraint (PDC) =  $173 \text{ ft} - 20 \text{ ft} = 153 \text{ ft}$

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

**Domestic 8:**

Water Column = 187 ft

DP = 3.7 ft (Net drawdown from the proposal indicated above)

DE = 41.9 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 45.6 ft

Economic Drawdown Constraint (EDC) =  $0.4 * 187 \text{ ft} = 74.8 \text{ ft}$

Physical Drawdown Constraint (PDC) =  $187 \text{ ft} - 20 \text{ ft} = 167 \text{ ft}$

Total drawdown of 45.6 ft is less than the EDC and the PDC, so this well is **not critical**.



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**Domestic 9:**

Water Column = 187 ft

DP = 4.6 ft (Net drawdown from the proposal indicated above)

DE = 41.9 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 46.5 ft

Economic Drawdown Constraint (EDC) =  $0.4 * 187 \text{ ft} = 74.8 \text{ ft}$

Physical Drawdown Constraint (PDC) =  $187 \text{ ft} - 20 \text{ ft} = 167 \text{ ft}$

Total drawdown of 46.5 ft is less than the EDC and the PDC, so this well is **not critical**.

**Domestic 10:**

Water Column = 187 ft

DP = 6.0 ft (Net drawdown from the proposal indicated above)

DE = 41.9 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 47.9 ft

Economic Drawdown Constraint (EDC) =  $0.4 * 187 \text{ ft} = 74.8 \text{ ft}$

Physical Drawdown Constraint (PDC) =  $187 \text{ ft} - 20 \text{ ft} = 167 \text{ ft}$

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

**Domestic 11:**

Water Column = 187 ft

DP = 5.9 ft (Net drawdown from the proposal indicated above)

DE = 41.9 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 47.8 ft

Economic Drawdown Constraint (EDC) =  $0.4 * 187 \text{ ft} = 74.8 \text{ ft}$

Physical Drawdown Constraint (PDC) =  $187 \text{ ft} - 20 \text{ ft} = 167 \text{ ft}$

Total drawdown of 47.8 ft is less than the EDC and the PDC, so this well is **not critical**.



**Domestic 14:**

Water Column = 187 ft

DP = 5.0 ft (Net drawdown from the proposal indicated above)

DE = 41.9 ft (Water level decline from 2023 through 2048 based upon GMD3 model)

DT = 46.9 ft

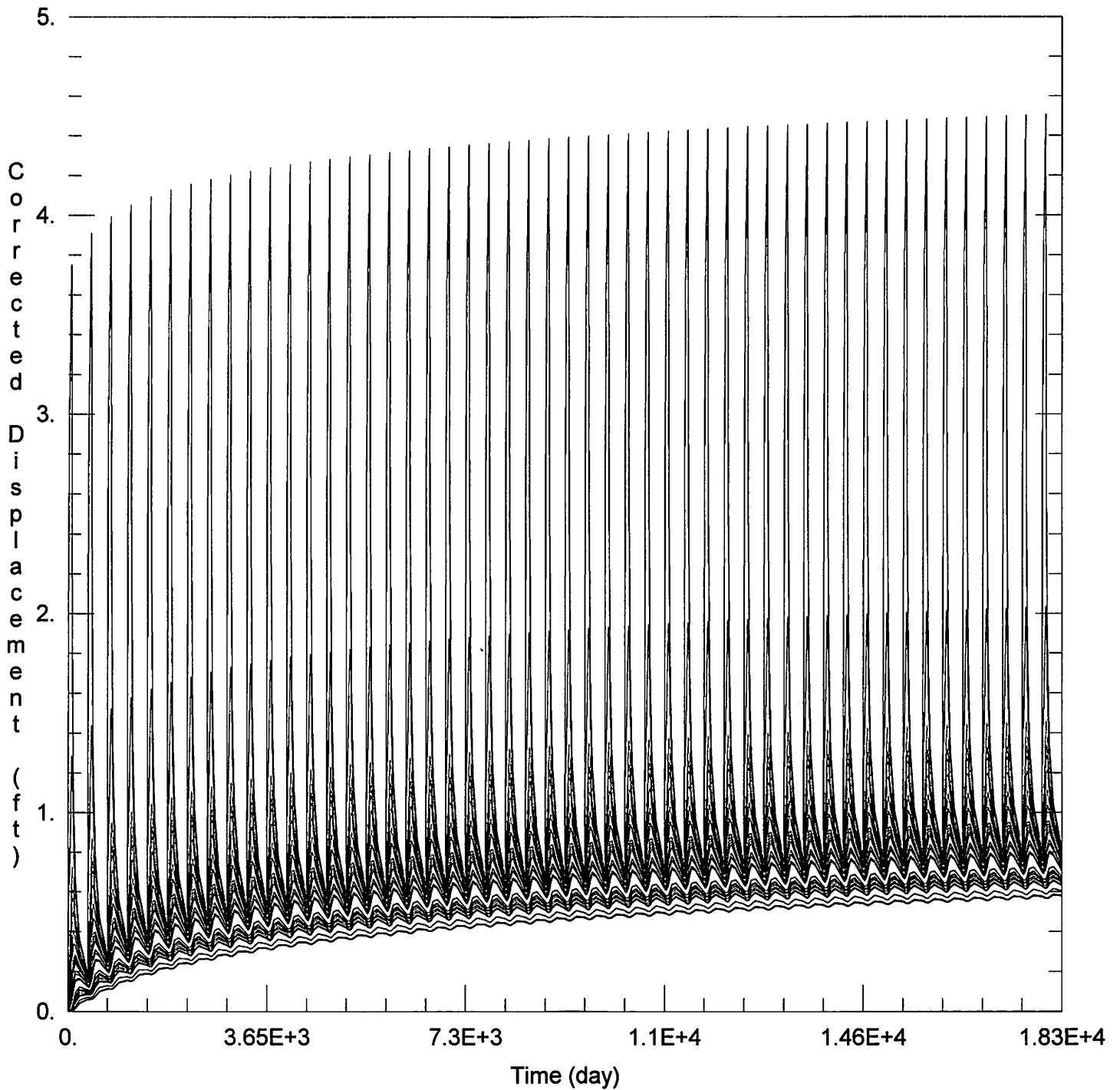
Economic Drawdown Constraint (EDC) =  $0.4 * 187 \text{ ft} = 74.8 \text{ ft}$

Physical Drawdown Constraint (PDC) =  $187 \text{ ft} - 20 \text{ ft} = 167 \text{ ft}$

Total drawdown of 46.9 ft is less than the EDC and the PDC, so this well is **not critical**.

**Conclusion:**

The proposed move is near several domestic wells where drawdown effects exceeded the allowance threshold. Critical well analysis did not flag these wells as critical because the GMD3 model indicates that there is enough saturated thickness, with good enough aquifer properties, to keep these wells operating and meeting domestic purposes for at least 25 years. Concerned neighbors should contact GMD3 at (620) 275-7147 or the Division of Water Resources at (620) 276-2901.



WELL TEST ANALYSIS

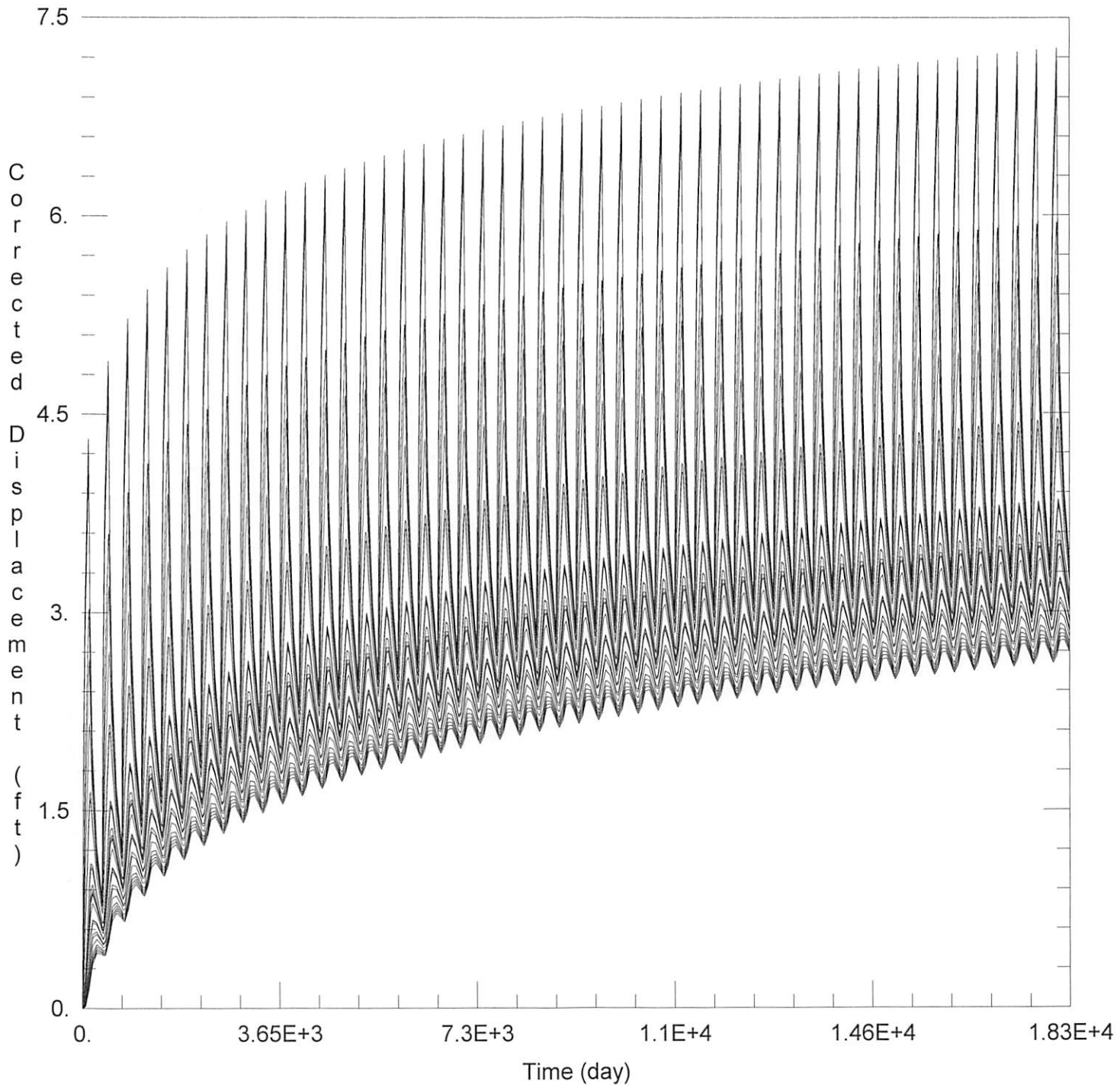
Data Set: C:\Users\trevora\Documents\2023 moves\FI\_214\FI\_214 Current.aqt  
 Date: 10/18/23 Time: 14:17:20

PROJECT INFORMATION

Company: GMD 3  
 Project: FI 214  
 Location: Finney County

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
FI 214	-60053	404433	□	-60053	404433
			□ FI 204	-61230	406300



WELL TEST ANALYSIS

Data Set: C:\Users\trevora\Documents\2023\_moves\FI\_214\FI 214 Proposed.aqt  
 Date: 10/18/23 Time: 14:17:12

PROJECT INFORMATION

Company: GMD 3  
 Project: FI 214  
 Location: Finney County

WELL DATA

Pumping Wells

Observation Wells

Well Name	X (ft)	Y (ft)
FI 214	-58488	405029

Well Name	X (ft)	Y (ft)
□ FI 204	-61230	406300