

2888 & 16256 & 18800: Drawdown from current location = 6.26 ft
Drawdown from proposed location = 9.61 ft
Net drawdown = **3.3 ft**

6013: Drawdown from current location = 5.51 ft
Drawdown from proposed location = 10.73 ft
Net drawdown = **5.2 ft**

16274: Drawdown from current location = 4.51 ft
Drawdown from proposed location = 9.63 ft
Net drawdown = **5.1 ft**

4229: Drawdown from current location = 4.82 ft
Drawdown from proposed location = 11.55 ft
Net drawdown = **6.7 ft**

Domestic 33-22-34: Drawdown from current location = 5.28 ft
Drawdown from proposed location = 9.20 ft
Net drawdown = **3.9 ft**

Net drawdown exceeds the drawdown allowance of 2.5 ft for all wells within 1 mile of the proposed location. Critical well analysis is necessary on those wells.

Critical Well Evaluation:

7735 & 9682:

Water Column = 88 ft

DP = 4.55 ft

DE = 28.9 ft (Water level decline from 2020 through 2045 based upon GMD3 model)

DD = 123 ft (S = 0.1777, T = 15,374 gpd/ft, Q = 781 gpm, tp = 105 days, efficiency = 70%)

DT = 88 ft (total drawdown cannot physically exceed the saturated thickness)

Total drawdown is greater than the 88 ft saturated thickness, so this well is **critical**.

8567:

Water Column = 105 ft

DP = 5.18 ft

DE = 24.9 ft

DD = 78.6 ft (S = 0.2249, T = 19,793 gpd/ft, Q = 652 gpm, tp = 83 days, efficiency = 70%)

DT = 105 ft (total drawdown cannot physically exceed the saturated thickness)

Total drawdown is greater than the 105 ft saturated thickness, so this well is **critical**.

2888 & 16256 & 18800:

Water Column = 60 ft

DP = 3.34 ft

DE = 33.4 ft

DD = 56.1 ft (S = 0.1532, T = 31,673 gpd/ft, Q = 696 gpm, tp = 97 days, efficiency = 70%)

DT = 60 ft (total drawdown cannot physically exceed the saturated thickness)

Total drawdown is greater than the 60 ft saturated thickness, so this well is **critical**.

6013:

Water Column = 127 ft

DP = 5.22 ft

DE = 35 ft

DD = 41.1 ft (S = 0.1807, T = 41,995 gpd/ft, Q = 661 gpm, tp = 123 days, efficiency = 70%)

DT = 81.3 ft

Economic Drawdown Constraint (EDC) = $0.4 * 127 \text{ ft} = 50.8 \text{ ft}$

Physical Drawdown Constraint (PDC) = $127 \text{ ft} - 60 \text{ ft} = 67 \text{ ft}$

The EDC is more conservative than the PDC, so the maximum allowable total drawdown is 50.8 ft.

Total drawdown of 81.3 ft is greater than the allowable drawdown of 50.8 ft, so this well is **critical**.

16274:

Water Column = 124 ft

DP = 5.13 ft

DE = 37.7 ft

DD = 21.9 ft (S = 0.1249, T = 59,669 gpd/ft, Q = 489 gpm, tp = 87 days, efficiency = 70%)

DT = 64.7 ft

EDC = 0.4 * 124 ft = 49.6 ft

PDC = 124 ft – 60 ft = 64 ft

The EDC is more conservative than the PDC, so the maximum allowable total drawdown is 49.6 ft.

Total drawdown of 64.7 ft is greater than the allowable drawdown of 49.6 ft, so this well is **critical**.

4229:

Water Column = 110 ft

DP = 6.73 ft

DE = 38.3 ft

DD = 28.9 ft (S = 0.2469, T = 55,727 gpd/ft, Q = 641 gpm, tp = 67 days, efficiency = 70%)

DT = 73.9 ft

EDC = 0.4 * 110 ft = 44.0 ft

PDC = 110 ft – 60 ft = 50 ft

The EDC is more conservative than the PDC, so the maximum allowable total drawdown is 44.0 ft.

Total drawdown of 73.9 ft is greater than the allowable drawdown of 44.0 ft, so this well is **critical**.

Domestic 33-22-34:

Water Column = 98 ft

DP = 3.92 ft

DE = 25.5 ft

DT = 29.4 ft

EDC = 0.4 * 98 ft = 39.2 ft

PDC = 98 ft – 20 ft = 78 ft

The EDC is more conservative than the PDC, so the maximum allowable total drawdown is 39.2 ft

Total drawdown of 29.4 ft is less than the allowable drawdown of 39.2 ft, so this well is **not critical**.

Conclusion:

This move is being proposed in an area with low saturated thickness and high yielding wells. The GMD3 model was used to determine aquifer conditions, and while the conditions in the model are not poor, they do not indicate that there is sufficient saturated thickness for the wells in the region to be pumping the rates that have been observed in recent inspections. It is likely that if an aquifer pump test were to be conducted, the calculated storage coefficient and transmissivity would demonstrate that the local aquifer can conduct water more readily than the GMD3 model indicates. That stated, this is an area with little remaining water supply, and aquifer conditions will become worse as supply declines. If the applicant were to pump the proposed well at the fully authorized rate and quantity of 1620 gpm and 680 AF, it is likely that impairment would occur. In order to prevent future impairment, GMD3 staff recommends limiting the applicant to a rate of 800 gpm and an annual quantity of 428 AF from the proposed well location. This would create the following net effects at neighboring critical wells (note that negative values indicate net improvement).

7735 & 9682:	Net Drawdown = -0.5 ft
8567:	Net Drawdown = 1.5 ft
2888 & 16256 & 18800:	Net Drawdown = -0.2 ft
6013:	Net Drawdown = 1.2 ft
16274:	Net Drawdown = 1.6 ft
4229:	Net Drawdown = 2.5 ft