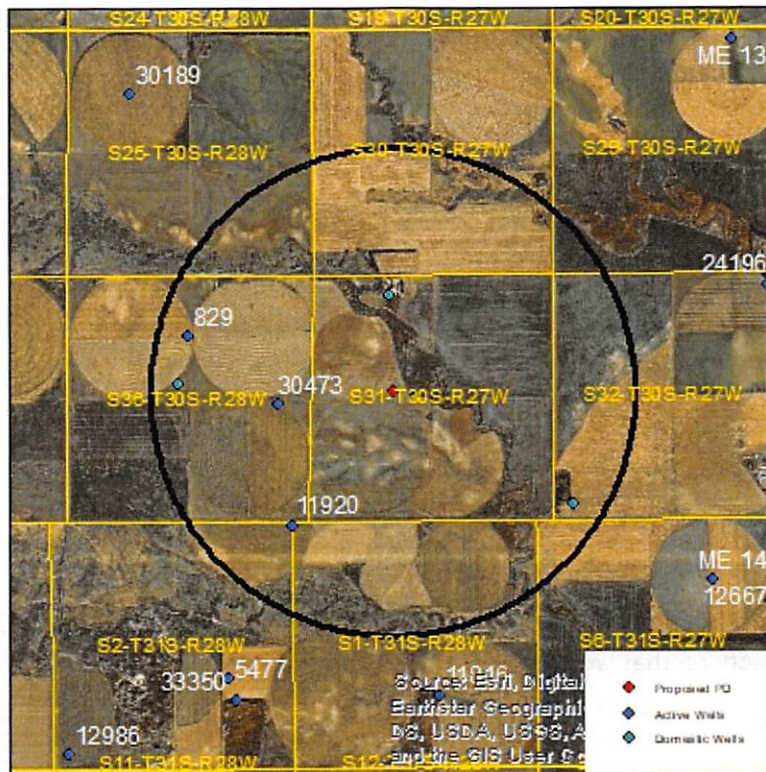


Evaluation of proposed move for Water Right No 30473

Proposed: Move water right no. 30473 a distance of 2507 ft to the east.



Wells within 1 mile: 829, 11920, a domestic well in section 36-30-28, a domestic well in section 32-30-27, and a domestic well in section 31-30-27.

The saturated thickness at the proposed well location is estimated to be 238 ft, based upon an observation well in section 2-34-28 and the driller's log at the proposed location. For saturated thicknesses greater than 200 ft, the maximum allowable Theis drawdown to neighboring critical wells is 4.0 ft.

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

$S = 0.04727$, $T = 6542 \text{ ft}^2/\text{day}$, $tp_{\text{current}} = 100$ days (no rate data available, so 100 day pumping period was assumed), $Q_{\text{current}} = 372$ gpm (based upon reported quantity and assumed rate), $tp_{\text{proposed}} = 72$ days, $Q_{\text{proposed}} = 1500$ gpm

Theis drawdowns were calculated as follows:

829: Drawdown from current location = 2.54 ft
Drawdown from proposed location = 5.03 ft
Net drawdown = **2.5 ft**

11920: Drawdown from current location = 2.42 ft
Drawdown from proposed location = 6.02 ft
Net drawdown = **3.6 ft**

Domestic 36-30-28: Drawdown from current location = 2.71 ft
Drawdown from proposed location = 4.98 ft
Net drawdown = **2.3 ft**

Domestic 32-30-27: Drawdown from current location = 1.29 ft
Drawdown from proposed location = 4.99 ft
Net drawdown = **3.7 ft**

Domestic 31-30-27: Drawdown from current location = 2.04 ft
Drawdown from proposed location = 9.13 ft
Net drawdown = **7.1 ft**

Net drawdown exceeds the drawdown allowance on the domestic well in section 31-30-27, so critical well analysis is necessary on that well.

Critical Well Analysis

Domestic 31-30-27:

Water Column = 257 ft (from driller's log)

Drawdown due to proposal = 7.1 ft (based upon 50 year Theis calculation)

Drawdown due to existing wells = 41 ft (based upon water table declines from the GMD3 model over 25 years)

Total Drawdown = 48.1 ft

Economic Drawdown Constraint = $257 \text{ ft} * 0.4 = 102.8 \text{ ft}$

Physical Drawdown Constraint = $257 \text{ ft} - 20 \text{ ft} = 237 \text{ ft}$

The economic drawdown constraint is more conservative, so it governs.

Total drawdown (48.1 ft) is less than the EDC, so this well is **not critical**.

Conclusion:

Given the current saturated thickness, this proposed change is unlikely to create noticeable effects on most neighboring wells. If the proposed well is pumped at its proposed rate and quantity, Theis calculations show that an effect greater than 7 ft will be noticed on the domestic well in section 31-30-27. However, critical well analysis shows that this well is not critical and is unlikely to be impaired.

Analysis also does not account for the surface water feature between the proposed well and the domestic well in section 31-30-27. This stream may create a hydrologic barrier, lessening the well-to-well interaction effect. GMD3 staff recommends approval of this application.