

MEMORANDUM

Date: October 19, 2011
To: Water Right File 85-7651
From: cpalmer
Re: Licensing Memo

The measured diversion rate that was obtained during the field exam was based on the rate of water discharging from sprinklers. However, there is a 2500 gallon storage tank where the well directly discharges and then two lines feed the home and the irrigation system. The diversion rate that was recommended by the field examiner is thus faulty. I pursued other ways to capture the actual diversion rate from the well but came up with a few obstacles. First, the well that was in operation during the field exam is no longer in operation. The right holder ultimately drilled a new well because the original well was not producing as expected. I confirmed this by evaluating other wells in the area and found that in the late 90s water was available from 25-70 feet but later the aquifer drastically diminished and well driller reports now indicate water at 675-685 feet. A new well was drilled in 2003 by the right holder so I am unable to collect measurements or other helpful information on the original system.

The diversion rate that I recommend is based on the duty of water. The field examiner acknowledges in his report that the right holder could only irrigate the pasture at the time of the field exam, the acres to the north of the home were not being irrigated. I calculated the irrigated area at 1.5 acres. To find a reasonable diversion rate I looked at the potential of the well based on the hp equation. Keep in mind that the right holder admitted during the field exam that the well is not producing what it should and that the result of my calculation is going to be on the high side:

hp of pump = 1 1/2
Depth to water=78 feet
Discharge Pressure= 0 (open discharge in storage tank)

$$8.8 \times 0.7 \times 1.5/78 + 2.31 = 0.12 \text{ cfs}$$

The diversion rate theoretical diversion rate is very close to the permitted rate of 0.13 cfs but there are two main reason the diversion rate will be scaled back: 1). the right holder acknowledged that he does not have enough water to irrigate 4 acres and just the pasture is being irrigated and 2). the well is being replaced because it is not producing what it should (a pattern of much deeper wells began to appear in the early 2000s.)

Rate

Irrigation : $0.03 \text{ cfs} \times 1.5 = 0.05 \text{ cfs}$

Domestic: standard of 0.04 cfs

Stockwater: duty of water for a couple horses of 0.01 cfs

Total maximum diversion rate will be limited to 0.05 cfs because we now the well cannot produce its potential and the system capacity is most likely to produce at least the irrigation requirement for 1.5 acres. If they had more rate available to them, they most likely would be irrigating more land.

Volume (domestic and stockwater are as recommended by field examiner)

$1.5 \text{ acres} \times 4\text{af (headgate requirement)} = 6 \text{ afa}$

$0.05 \times 1.9835 \times 294 \text{ days} = 26.2 \text{ afa}$

Summary of Wells in the Vicinity of Well Authorized under 85-7651
Sampling of Wells Were Drilled for Domestic Purposes

<u>Year</u>	<u>Owner</u>	<u>Tag #</u>	<u>SWL</u>	<u>Total Depth</u>
1998*	Elaine Best	D0005276	25	198
1999**	Dave Best	D0005785	60	750
1999	Kevin Cromer	D0010476	74	206
1999	Kevin Cromer	D0010501	60	200
2000	Teck Gotreau	D0013493	70	197
2003	Joe Greco	D0028230	680	805
2003	Homer McLean	D0028099	91	200
2003	Dave Best	D0028231	675	950
2003***	Elaine Best	D0028328	680	855
2004	Carol Ard	D0033528	684	850
2008	Theo Amak	D0054436	685	900

*well originally drilled under 85-7651

**note that during the FE for 85-7652, the right holder states the well dries up after running for a 1-2 hours

***new well drilled for 85-7651

compiled by Colmer for informational purposes.
This confirms that wells in the area were compromised
when they were drilled 100' or less.

