

MEMORANDUM

December 14, 2001

TO: Brian Wilson, Chief, Water Use and Conservation Bureau

FROM: Tom Morrison, Chief, Hydrology Bureau

SUBJECT: Evaluation John Garcia lot split, Santa Fe County

As requested, we have reviewed materials prepared by Clay Kilmer, consultant for the developer. The materials include an April 27, 1999 letter responding to my December 4, 1998 memorandum, a September 1999 report, and results from an aquifer test performed in November 2000. The property is located several miles south of the State Penitentiary in an area known to have low yielding wells. The basic minimum lot size is 40 acres but the developer is attempting to demonstrate a sufficient supply to support 2.5-acre lots on the 12.5-acre tract.

We have reviewed the submittals and find that our previous opinion remains unchanged: the developer's analyses are very optimistic and do not demonstrate a 100-year supply for 2.5-acre parcels. Allowing any division of land on the 12.5-acre tract will **not conform** to the Santa Fe County Land Development Code regulations for water availability.

Mr. Kilmer recommended a specific yield of 0.075 in his March 1998 and September 1999 reports and we used this value in our 1998 calculations. Nevertheless, he indicates in his April 1999 letter that we were incorrect in using his recommended value and argues that a specific yield of 0.15 be used. The low well production demonstrated at the Garcia well suggests that Mr. Kilmer's specific yield of 0.15 could be too high. However, since well yields are dependent upon several factors, some of which include the thickness of the water bearing zone and specific yield, Kilmer's assumed 202-foot saturated thickness could also be overstated. Wells completed in an aquifer system as described by Kilmer would be expected to yield more than the 3 gallons per minute (gpm) observed from the Garcia well.

The submittals also contained the results of an aquifer test performed on the Garcia well in November 2000. A comparison of these results to the September 1998 test suggests that the Garcia well has lost some capability to sustain previous production levels. A yield of 3.1 gpm could be sustained in 1998 for almost 7 days while 3 gpm could be sustained for only 6 hours in the November 2000 test. Production fell to 2 gpm for the remainder of the test. Well yields will decline further as water levels continue to decline in the future. Mr. Kilmer indicates on page 2 of his 1999 letter that water levels are declining in the area.

To ensure our previous findings are reasonable another analysis was performed. A specific yield of 0.15 is used but the actual proven thickness of the water bearing formation at the Garcia well is applied. The driller indicates that only one 30-foot thick

saturated zone was encountered by the Garcia well (see attached well record). Calculations are performed using these values:

$$A = (AC \times SY \times ST \times RP = 12.5 \text{ acres} \times 0.15 \times 30 \text{ feet} \times 0.80. = 45.0 \text{ acre-feet}$$

$$\text{Minimum lot size} = U \times \text{acres}/A = 0.25 \text{ afy/parcel} \times 100\text{yrs} \times 12.5/45.0 = 6.94 \text{ acres.}$$

This value compares well to the minimum lot size of 6.83 acres computed in my 1998 memorandum.