

October 21, 2003

Doug Johnston  
Planning and Zoning Director  
Torrance County  
P.O. Box 48  
Estancia, NM 87016

**CERTIFIED MAIL**  
**RETURN RECEIPT**  
**REQUESTED**

**Re: Cattle Country Subdivision**

Dear Mr. Johnston:

On September 29, 2003, the Office of the State Engineer received a request to review the Preliminary Plat for "Cattle Country", a Type Two Subdivision. The proposal is a request to subdivide 321.65 acres of land into 67 residential lots and 22 commercial lots. The proposed subdivision is located approximately six and a half miles east of Moriarty, south of State Road 333, within the S ½ of Section 18, Township 9 North, Range 10 East, NMPM. Water will be provided by a community water system designed and built for this subdivision. This submittal was reviewed pursuant to the Torrance County Subdivision Regulations and the New Mexico Subdivision Act. It is the opinion of this office that the developer's water supply proposal **does not satisfy** the requirements of the County subdivision regulations.

**WATER DEMAND ANALYSIS AND CONSERVATION**

The developer quantified the maximum annual water requirement for the residential lots pursuant to Section 2.1.b of the Supplemental Guidelines for the County Subdivision Regulations for both indoor and outdoor purposes following the procedures set forth in OSE Technical Report 48 (Wilson, 1996). The water requirement for each parcel was estimated at 0.45 acre-foot per year, assuming 3 persons per dwelling, 1,400 square feet of lawn, 200 square feet of trees and shrubs, 100 square feet of garden, 10% distribution system losses and fire fighting requirements. If evaporative cooling water requirements for Albuquerque are used to reflect conditions in Torrance County, indoor water requirements could be reduced from 85 gallons per capita per day (gpcd) to 76 gpcd (see OSE Technical Report 48-Wilson, 1996). In Article II of the Declaration of Covenants and Water Restrictions reference is made to restrictions requiring the use of water saving fixtures and water conservation landscaping. It is recommended that the total irrigated area be limited to a maximum of 800 square feet per parcel.

The developer quantified the maximum annual water demand for the commercial lots by subtracting the total residential water requirement (30.4 acre-feet per year) from the total permitted amount (54 acre-feet per year), and dividing it by the number of lots. This method is inadequate. A detailed water demand analysis must be prepared, as required by Section 2.2 of the Supplemental Guidelines for the County Regulations, which states, “*For all non-residential subdivisions and all water uses not directly related to residential uses within a mixed development subdivisions a detailed water demand analysis must be prepared using relevant OSE technical report*”. Water requirements for a variety of commercial operations is presented in “*A Survey of Residential and Commercial Water Use*”, prepared by the City of Santa Fe. Water requirements for landscape irrigation may be determined from data published in OSE Technical Report 48.

### **WATER AVAILABILITY ASSESSMENT**

The proposed water supply for this development is a new community water system. The developer states that “*one well currently has 54 acre-feet of permitted water rights associated with it, which equals 33 gpm continuously*”.

This description is **not** accurate. The State Engineer records show that the developer is permitted to divert **53.5 acre-feet** of water per annum from **four existing wells** (E-1679, E-1679-S, E-1679-S-2 and E-1679-S-3), for subdivision, commercial, truck terminal, indoor horse arena and two mobile homes. This means that the permittee may pump the whole amount of water from one well, or from up to four wells combined.

The proposal is completely silent on the four wells issue, and bases the water availability assessment only on one well. Incidentally, this well is named E-789 in the report, while the information contained in the well record suggests that it was drilled under permit E-7893, and that it was renumbered E-1679-S in the aforementioned OSE permit. To avoid confusion, I will refer to the well in question as E-1679-S.

The subdivider submitted a geohydrologic report to demonstrate that well E-1679-S is sufficient to meet the maximum annual water requirement for 70 years. A pump test was carried out at an initial rate of 20 gpm, increased to 30 gpm and then to 50 gpm. The report refers to a graph of the test shown in Figure 6. Figure 6 cannot be found anywhere in the report. There are two graphs in the report, entitled “Test # 1”, and “Ansley step test”, which are not in the correct format (as discussed below). Transmissivity values ranging between 10,000 gpd/ft and 1,000 gpd/ft were used to estimate the drawdown effects over 70 years. The report concludes that it is reasonable that the well will be able to supply 33 gpm (that is 54 acre-feet per annum) for a 70 year period.

The following major issues were found in the geohydrologic report:

- It does not contain maps and cross-sections showing geology, depth to the water bearing formation, water level contours and estimated thickness of saturation in the aquifer, as required by Section 5.4.e of the Supplemental Guidelines for the County Regulations. The developer tested only one well within the subdivision boundaries. A report prepared for a subdivision located approximately two miles to the west is attached. However, because there is no discussion about aquifer similarities it cannot be representative of the hydrological conditions.

- It not does not include recovery data, the graphs are not in the appropriate format, and therefore the transmissivity values are unfounded. In order to evaluate the results from an aquifer test, the time-drawdown data should be presented numerically in a table and should also be plotted on semi-log graph paper. In addition, the time-recovery data should be plotted on semi-log paper and tabulated in a table that includes the time since pumping began (t in minutes), the ratio  $t/t''$  which is the time since pumping began divided by the time since pumping stopped, and the water levels. The time-recovery data should then be plotted on semi-log graph paper and the transmissivity calculated from the late-time data. The transmissivities calculated from the time-drawdown and time-recovery graphs should then be compared and the value that is deemed most reliable should be used in the subsequent calculations of the 70-year schedule of drawdown effects.
- The well log indicates that well E-1679-S is 540 feet deep, that the water-bearing strata is between 510 and 540 feet. The geohydrology report indicates that the saturated thickness is 380 feet, which is the difference between the static water level (160 feet) and the total depth of the well (540 feet). This value is ten times the 30 feet indicated in the well record. The drawdown calculations should consider this essential factor.
- Although the well record indicates the estimated yield at 30 gpm, the well was pumped at 30 and 50 gpm during the test. Because the test is not accurately described, and the data is not presented in the correct format, there are doubts as to whether the well can sustain a production of 33 gpm.
- The geohydrology report fails to evaluate well sustainability, by considering the additional declines due to well efficiency reduction over time, seasonal fluctuations, and drought allowance, as required by Section 5.4.d of the Supplemental Guidelines for the County Regulations.

## CONCLUSION

This office is compelled to issue a **negative** opinion for the Cattle Country Subdivision proposal due to failure to calculate the maximum water demand for the commercial lots in accordance with Section 2.2 of the Supplemental Guidelines for the Torrance County Subdivision Regulations, and failure to prove water availability in accordance with Section 5.4 of the same regulations.

The OSE is prepared to re-evaluate the development proposal when these items have been properly addressed. If you have any questions, please call me at 505-827-4273.

Sincerely,

Mara Smith  
Water Use and Conservation Bureau

cc: Brian C. Wilson, P.E., OSE Water Use and Conservation Bureau Chief