



12975 W. 24th Pl.
Golden, (Applewood) Colorado, 80401
(303) 237-8865
Fax 237-8869

February 20, 2107

Ms. Chelsy Clark-Supinski
Martin/Martin, Inc.
12499 W. Colfax Avenue
Lakewood, CO 80215

RE: Adams County Animal Shelter Ground Water Availability

Dear Ms. Clark-Supinski:

As directed, we have completed our report on the availability of deep ground water on the Adams County Animal Shelter property located in the SE 1/4 of section 33, T1S, R67W (see attached map).

LEGALLY AVAILABLE GROUND WATER

Our research shows there are two documents in the Colorado Division of Water Resources archives relevant to this property—the Determination of Facts (4-14-89) and the water court Decree (10-30-90). These documents (attached) apply to a much larger tract of land (1152 acres) covering portions of sections 26, 27, 33, and 34 of T1S, R67W (see map in the Decree). There is at least one conflict between the two documents, that of the volume of the annual appropriation of water that can be withdrawn from the Lower Aquifer. In this case, the Decree overrules the Determination of Facts.

The Decree (88-CW-216) is listed under the Applicant name “Adams County Board of Commissioners”. Assuming the Animal Shelter is part of this entity, this decree should apply to their property and they should be able to drill a well or wells by simply obtaining a well permit.

The two documents summarize the water legally available from the Upper Arapahoe, Lower Arapahoe and Laramie-Fox Hills aquifers. The Upper Arapahoe aquifer is defined as NOT nontributary water which requires an augmentation plan be in place prior to water use, and is very thin. For these reasons it is of very limited value and should not be considered as a water source for the Shelter.

The Lower Arapahoe Aquifer has nontributary water available for immediate use at a withdrawal rate of 223 AF/yr. One well (KLA-4) is already listed in the Decree as a well site on the Shelter property in the SE, 33, T1S, R67W (see map in the Decree).

The Laramie-Fox Hills Aquifer also has nontributary water available for immediate use at a rate of 348 AF/yr. A wellsite for well KLF-4 is also listed in the decree near well KLA-4.

Note that the annual withdrawal rates apply to each wellfield. In other words, the annual appropriation can be withdrawn from one well alone or from a combination of wells in a given aquifer. It is my understanding that the Shelter will need a very small amount of water annually (maybe 3-5 AF/yr). Therefore, the Shelter's withdrawals will be a very small percentage of the water legally available for use.

The Decree has an "Additional Wells" clause, so the Shelter will be able to pick a well site anywhere on the property as long as the well is more than 600 feet from existing wells in the same aquifer.

Note that the annual appropriation can be changed through the "retained jurisdiction" clause in the decree, if, when a well is constructed the saturated aquifer thickness or specific yield of the sands is different than that assumed in the Decree. This could result in a small change in the rate of wellfield withdrawal, but not enough to concern the Shelter.

PHYSICALLY AVAILABLE GROUND WATER

A Lower Arapahoe well on the Shelter property should be capable of producing about 20 to 50 gpm on a long term basis. These wells will be about 424 feet deep. Water quality in this aquifer is good with low hardness levels, TDS levels at about 300 mg/l, and with moderate sulfate levels.

Wells in the Laramie-Fox Hills aquifer on the property should be about 1108 feet deep and produce about 30 to 40 gpm. LFH wells will likely have a high TDS (700-800 mg/l), low hardness and low sulfate levels.

Both aquifers sometimes have elevated levels of iron and fluoride.

Our recommendation would be to complete a well into the Lower Arapahoe aquifer at a convenient location. If water needs are critical, we would suggest drilling two LA wells, so at least one well would be active when the other is down for repairs.

Sincerely,



Patrick OBrien, PE, CPGS