IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW MEXICO

UNITED STATES OF AMERICA, AND STATE OF NEW MEXICO ex rel. STATE ENGINEER, Plaintiffs, v. A & R PRODUCTIONS, et. al., Defendants.	)	No. 01cv00072-MV-WPL ZUNI RIVER BASIN ADJUDICATION Subfile No. ZRB-2-0038

DEFENDANTS' REPLY TO RESPONSE TO MOTION FOR SUMMARY JUDGEMENT

Pursuant to Rule 56 Fed. R. Civ. P., and D.N.M.LR-Civ. 56.1, Defendants *Pro Se*, Craig L. Fredrickson and Regina R. Fredrickson (hereafter the "Defendants") respectfully submit *Defendants' Reply to Response to Motion for Summary Judgement*. The paragraphs below constitute Defendants' Memorandum in support of this reply.

Defendants have established that there is no genuine dispute because the evidence submitted in opposition to the Defendants' Motion for summary judgement is so insubstantial that no reasonable fact-finder could resolve the dispute in Plaintiffs' favor.

I. INTRODUCTION

Defendants find themselves before this Court for the simple reason that they held the Plaintiffs accountable for defending the factual basis for their settlement offer on Defendants' pre-basin, cow-calf operation water right for the Rincon Hondo well (10A-5-W06). Plaintiffs now confirm that their assumed cattle water intake rate applies to non-lactating beef cattle (Doc.

3315-1 at 13-14 [#14]) , i.e. not cow-calf pairs, and astonishingly admitted that they had doubled that cattle water intake rate "to account for the innumerable, unknowable factors that might possibly effect livestock water consumption" (Doc. 3305-1 at 5 [RFA 14]). How Plaintiffs' "experts" were able to determine that doubling a mistaken assumption would overcome "innumerable, unknowable factors" has yet to be revealed. However, Plaintiffs argument now is that, unless the Defendants can divine the truth, they are entitled to no water right whatsoever.

II. REPLY TO PLAINTIFFS' RESPONSE

Defendants specifically dispute Plaintiffs' characterizations that Defendants have done no more than present their legal conclusion as to the five elements of their claimed livestock-use water right and may have done so in an atypical manner (Doc. 3317-1 at 5 [footnote 4]). Defendants have cited particular parts of the material in the record in support of each and every water right element (Doc. 3305). Defendants also dispute Plaintiffs' contention that Defendants have no livestock-use water right associated with well 10A-5-W06. Defendants have established that the subject well is a pre-basin well for which a valid declaration of water right exists.

Defendants dispute Plaintiffs' assertions below. Reference is made to Mr. Turnbull's (Turnbull) declaration by paragraph number (#) (Doc. 3315-1); emphasis is added by italics.

1. Mr. Fredrickson has no reasonable basis to assume that a cattle herd watered exclusively from well 10A-5-W06 for a four or five month period.

Defendants' well is located in the bottomland of a steep-walled canyon at the center of a historic year-round, cow-calf operation. From rancher Tom Cox's testimony, it was the only source of water used during both winter and summer seasons. Defendants have established that,

during years of favorable forage growth, the forage within the two-mile grazable distance from the well[1] exceeded the needs of all the cattle that could range and water there without abusing the range. Although alternative sources of water were available greater than five miles away, "[l]ivestock, particularly cattle, are predictable in their grazing behavior. One of their most conspicuous habits is to graze convenient areas. These are generally areas close to water or those that are easily accessible, such as level terrain within an area of rough topography. Given the choice and/or lack of sufficient enticement, cattle will abuse these convenience areas." [2]

Contrary to Plaintiffs' claim, Mr. Cox, did not testify that his herd relied on four water sources *equally* during the summer season, rather that he *did not manage the herd at all during the summer*. For the 4 to 5 month summer season, the herd was released at Defendants' well and was free to roam wherever grass and water was available. The summer forage proximate to Defendants' well in *years of favorable rainfall* and the behavior of cattle as cited above supports Defendant's assertion that the entire herd *could* reasonably be expected to water exclusively at Defendants well during summer in some such years. Thereby, the amount of livestock water reasonably produced and applied to beneficial use from Defendants' well is established. Defendant did not claim this occurred every year but provided meteorological records that support the existence of favorable rainfall for forage growth in 11 of the 18 years Mr. Cox was ranching. Defendant acknowledged that the herd could find additional forage at water elsewhere in years of unfavorable rainfall, albeit by ranging five miles or more away over steep terrain.

[1] Holechek, Jerry L, 1988. An Approach for Setting the Stocking Rate. *Rangelands* 10(1), February 1988.

[2] Volesky, J.D., W.H. Schacht, and S.S. Waller. 1996. G80-504 Proper Livestock Grazing Distribution on Rangeland (Revised February 1996). Historical Materials from University of Nebraska-Lincoln Extension.

The statutes of Chapter 72, Section 12 of New Mexico law are codified at 19.27.1 New Mexico Administrative Code (NMAC). With respect to the application for appropriation of underground water applied to beneficial use (19.27.1.10 NMAC):

> The annual amount of the appropriation permitted under one application will be limited to the *annual amount that can reasonably be expected to be produced and applied to beneficial use from a single well* constructed at the point, in the manner, and for the purpose set forth in the application.

Re #19: Defendant provided meteorological data that support one or more years of favorable forage production based on site-specific, Natural Resources Conservation Service (NRCS) reporting. Defendant assigned the "Shortgrass Prairie" range type at 40-50% utilization as representative of the blue grama-dominate forage of their canyon bottomland.[1] Blue grama is a shortgrass and rainfall in the region of Defendants' well averages 14 inches (in.) per year, consistent with the 10-16 in. average annual precipitation for this range type. The mid-point forage utilization is 45% for this range type and is specific to blue-grama.

Turnbull asserts that the Defendants' forage is of the "Semidesert Grass and Shrubland" range type at 30-40% utilization.[1] This type is representative of the northern part of the Chihuahuan Desert where black grama grows on mesquite-infested range and annual precipitation averages 8-12 in. Black grama and mesquite do not appear on Defendants' land. Reference to Galt, 2000 and a 25% utilization also pertains to the Chihuahuan Desert which is dissimilar from Defendants' land in terms of forage type, elevation and rainfall.

Re #20: By assigning the wrong range type to Defendants' land, Turnbull mistakenly asserts that less forage would be available than needed, even in years of favorable rainfall. Moreover, he suggests that Defendant's total forage amounts are available to summer cattle,

without regard to fencing; this is not true. Defendant considered depletion of all available forage based on both winter and summer season stocking as described by Mr. Cox (Doc. 3305-7 at 38 [Table 5]). Precise fence locations dividing the summer and winter range are unknown but immaterial since unmanaged cattle will abuse convenient areas anyway.[2]

Re #21: Turnbull quotes Defendants' Motion out of context creating a declarative statement as underlined below. The Motion actually reads in full (Doc. 3305 at 21):

> From this descriptive information a time-history of the number of cattle watering at well 10A-5-W06 is developed by cattle class and month assuming that 100% of the herd waters exclusively at this well during the summer season (Exhibit G at page 38, Table 5); this establishes the upper limit annual usage of the well as 49,860 AUDs.

Defendant evaluated all water sources and specifically identified the High Lonesome well as an alternative water source with nearby forage for the herd in unfavorable years. Two other sources, Zuni Spring and the Perry Canyon well, were appropriately excluded as undeveloped or gypsum-contaminated with insignificant water capacity (Doc. 3305-7 at 18-22).

Re #22: The National Research Council assigns the water intake rates for "cows nursing calves" to "lactating cows" as guidance without noting any time or dry matter intake dependency.[3] As such, Turnbull's opinion that these don't apply conflicts with that of the National Academy of Sciences. Defendant did consider both the water and milk intake of calves during the first three months (Doc. 3305-7 at 45).

Re #23 & 24: Rainfall amount affects the quantity of forage produced not the annual average moisture content of individual plants. At 12% moisture content, the difference between

[3] National Research Council (NRC). 2000. *Nutrient Requirements of Beef Cattle*, 7th ed. Washington, D.C.: The National Academies Press.

free water intake and total water intake is small, less than one cup per day in the Winchester and Morris, 1956 example method.[4] Moreover, this amount would be offset by the additional water required by the physical activity of ranging cattle versus cattle confined to a test chamber.

Re Dec #25 & #26: Turnbull disputes use of ambient daytime temperature in favor of average daily temperature for assigning cattle drinking rates. Cattle water intake is a function of temperature which varies by time of day. If cattle seldom drink at night[4], night-time temperatures for a specific day of the year should not be considered in evaluating water intake of cattle for that specific day. Defendant provided data that validates the use of an ambient daytime temperature to calculate water intake. Turnbull's referenced example of pooled data for three Hereford cows at 90° F is irrelevant; Defendant never used drinking water rates at temperatures above 78.8° F. Turnbull's reference to Hyder, 1970 is also irrelevant; it is simply a progress report on Hyder's effort to correlate forage intake to water intake for which he described "a very strong desire to improve." Ultimately, Defendant's use of ambient daytime temperature produces results less than the guidance provided by range scientists at New Mexico State University ("NMSU"), Cooperative Extension Service for cow-calf pairs.[5]

Re #27 & 28: The NMSU guidance states that "[a] 26-gallon per day (gpd) water use estimate for a cow and her calf is reasonable *for temperatures up to 80° F*;"[5] it clearly is not intended to be applied only at 80° F (Doc. 3305-13 at 2 [Table 1]).

[4] Winchester, C.F., and M.J. Morris. 1956. Water Intake Rates of Cattle. *Journal of Animal Science*, 15, 722–740.

[5] Ward, Marcy A. et. al. 2015. Estimating Water Intake for Range Beef Cattle [guide B-231]. Cooperative Extension Service, College of Agricultural, Consumer and Environmental Sciences, New Mexico State University.

Re #29: Winchester and Morris, 1956 do not characterize their data as being derived from "feedlots" but rather from individual animals maintained in constant temperature chambers under experimental conditions.[4] The one exception is the pooled use of data for three Hereford cows on rangeland as discussed above.

2. Mr. Fredrickson has no reasonable basis to conclude that a cow-calf pair historically consumed 19.66 gallons per day.

Using the available water intake rates of cattle as published by the U.S. Department of Agriculture[4] and as applied by the National Research Council[3], Defendant calculated that the water consumption of the cow-calf pairs averaged 19.66 gpd over the combined winter and summer seasons. This average amount is less than the 26 gpd guidance for cow-calf pairs provided by the NMSU, Cooperative Extension Service[5] and is reasonable by comparison. Defendant's maximum water consumption rate for a cow-calf pair was 24.05 gpd, that being less than the 30 gpd *expected* consumption rate estimated by Mr. Cox (Doc. 3305-11 at 13[Cox Dep. 68:1-4]) and less than the 28.8 gpd used by NRCS as design criteria for cow-calf watering facilities.[6] Turnbull's assertions at paragraphs 22 through 28 of his declaration are explicitly refuted above.

3. Mr. Fredrickson has no reasonable basis to conclude that the Cox family ranching operation ever suffered water losses of 415,522 gallons annually from well 10A-5-W06.

Mr. Fredrickson was required to assess the quantity of water beneficially consumed in support of Defendants' claimed livestock-use water right including Plaintiffs' "innumerable, unknowable factors" associated with livestock water use. A detailed assessment was made of

[6] NRCS, 2010. Water Facility Design Criteria for Cattle. U.S. Department of Agriculture. Design Technical Note SD2006-1.

water consumption, infrastructure-related losses, naturally-occurring losses and losses associated with exploitation of the water source by wildlife. These total 415,522 gallons of water beneficially used annually in the course of supplying the historic drinking water needs of cattle at Defendants' well. While Plaintiffs selected a 50% efficiency factor to account for such losses, Defendant calculated losses that correspond to a site-specific efficiency factor of 66%, i.e. 66% of the total water beneficially used is consumed by the cow herd rather than 50% as assumed by Plaintiffs.

Plaintiffs mischaracterize Defendant's 202,080 gallons of water associated with what is termed by Defendants as a consumptive uncertainty. In fact, Defendants never took credit for that quantity and it is not included in the 415,522-gallon total. Rather, it is quantified from the NMSU guidance[5] for the purpose of demonstrating that the annual losses Defendants credited are significantly less than that which can be justified (Doc. 3305-7 at 53-54).

Plaintiffs' assert that Defendants point to the details of the water loss assessment contained in Defendant's written report and, as such, do not demonstrate in the text of Defendants' Motion the absence of a genuine dispute as to any material fact. This bald assertion is made despite the fact that Plaintiffs do the same to a greater degree in their Response.

Re #32: Water lost during the drinking process is calculated through consideration of the observed loss percentage and total quantity of water consumed by cattle per year. Turnbull erroneously claims that this loss is accounted for in the cattle drinking water rates used by the Defendant; this is not the case. Mr. Turnbull quotes Ragsdale et al.,1951 but omits the following sentence which provides context. It reads, "[t]he higher the temperature (above about 80° F) the more the animals tend to "play" with the cool water, licking its surface, dipping the muzzle into the cup then often throwing the dripping head over the back as if chasing flies." Figure 9 of

Ragsdale et.al., 1951 shows that this dramatic increase in spillage only occurs once the ambient temperature exceeds 80° F. Defendant's report never used water intake rates for temperatures above 78.8° F. As such, and even assuming Winchester and Morris, 1956 had not corrected for this spillage effect, it would not have affected Defendant's results.

Re #33: Plaintiffs mischaracterize Defendant's 59,054 gallons per year as trough cleaning when it represents refreshing the water to mitigate algae formation. Reference is made by Defendants to this frequent practice at multiple feedlots, not a single feedlot. Turnbull cites an APHIS report for a lesser water cleaning frequency but neglects to reveal that this reference also indicates that water quality in 80% of the feedlots surveyed is maintained through the use of antimicrobials. Such a practice would obviously reduce the needed frequency of water replacement. Mr. Cox did not suggest that he used antimicrobials in the water troughs at the well and simply did not speak to water change-out but to the cleaning or repair of the tanks themselves.

Re #34: Plaintiffs assert that 197,103 gallons per year of weep hole losses are unreasonable and unsupported but demonstrate no knowledge of how well pipe is protected from freeze failure. When Defendants actually experienced such a failure (Doc. 3305-8 at 4), Mr. Fredrickson inquired with Tim Cox (brother of deponent Tom Cox) on the presence or absence of a weep hole (this conversation was disclosed during Discovery). He stated that a weep hole had been installed in the drop pipe of every well on the Cox Ranch. Defendants were able to clear the weep hole of iron bacteria using a long-handled tube brush and chlorine. Ironically, the iron bacteria buildup had been a result of Defendants' efforts to conserve water by furling the tail of the windmill and shutting off the pumping action; this had allowed iron bacteria to colonize the transition zone between aerobic and anaerobic environments, clogging the weep hole. The

freeze-related failure confirmed that the bottom check valve is functioning and that the well piping is intact thereby exposing water in the stand-pipe to freezing temperatures.

The size of the weep hole is easily inferred from observing the loss rate and recover rate of the water level in the well pipe and the volume therein. Simple math allows the annual loss to be calculated based on windmill pumping frequency and rate. Importantly, and while some unknown fraction of the loss may eventually return to the aquifer, there is no provision in New Mexico groundwater law or regulation that allows the water withdrawn from an aquifer and then recharged to be considered anything but a withdrawal, i.e. there is no "return flow credit" provision. In contrast, there is such a provision for New Mexico surface water withdrawals.

Re #35: Defendant have visually observed an average water level drop of about one foot per week in the main water storage tank and assigned two-thirds (8 in./wk) of this loss to leaks present throughout the water distribution system, the remaining loss (4 in./wk) being assigned to net evaporation or other causes. Defendant noted that annual, net evaporation would only account for approximately 1 in./wk of water level drop. Importantly, this loss rate is observable after Defendants removed a major source of leakage that was present during historic ranch operations (Doc. 3305-8 at 1 [Figures 23 and 24]); this suggests that an even greater loss rate had been experienced in the past. Defendant also provided photographic evidence of historic repairs and chronic leakage in the water storage and distribution system. Defendants acknowledge Mr. Cox's lack of recollection of infrastructure details during his time ranching, including his failure to recall one of the two permanent drinkers at the well (Doc. 3305-11 at 12 [Cox Dep 64:7-11]).

Re #36: Contrary to Turnbull's assertion, Defendant did not assume an average ice thickness of 4 in. but that the combined ice and water lost in physically chopping up and removing

ice slabs is estimated to be volumetrically equivalent to 4 in. of water loss on average. The total considers that ice thickness varies from zero to greater than 5 in. between removals depending on prevailing temperature. Based on Defendant's experience, it is impossible to remove broken slabs of ice from a 7.33-foot diameter drinker without an almost equal loss of water. The small volumetric difference in the ice versus water is inconsequential.

Re #37: Average annual wildlife water consumption is calculated based upon Defendant's observation and the drinking rates for elk and mule deer. Defendants have had no reason to keep written records of wildlife use but have thousands of game camera photos supporting the estimates. Turnbull's quotation that cattle "cause changes in distribution of both elk and mule deer" is not found in his cited study. Moreover, the study considered effects on pasture use and not use of a water source. Even so, Defendant's experience is that elk and mule deer simply shift their drinking to night-time when threats are perceived during the day; cattle seldom drink at night.[4]

III. CONCLUSION

Defendants have established that there is no genuine dispute because the evidence submitted in opposition to the Defendants' Motion for summary judgement is so insubstantial that no reasonable fact-finder could resolve the dispute in Plaintiffs' favor.

Respectfully submitted this 29th day of September, 2016.

Craig Fredrickson /s/ Craig Fredrickson

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CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on September 29, 2016, I filed the foregoing electronically through the CM/ECF system, which caused the parties or counsel reflected on the Notice of Electronic Filing to be served by electronic means.

Electronically Filed

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