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BEFORE THE ENVIRONMENTAL QUALITY COUNCIL
STATE OF WYOMING

In the Matter of the Appeal of JOHN D. KOLTISKA, AC RANCH, INC., a Wyoming Corporation, PRAIRIE DOG RANCH, INC., a Wyoming Statutory Close Corporation, and PRAIRIE DOG WATER SUPPLY COMPANY from WYPDES Permit No. WY0054364	)	Docket No. 09-3805

PENNACO ENERGY, INC.'S PREHEARING MEMORANDUM

I. Introduction

Pennaco has invested in a treatment plant to treat CBM water to ultra-low EC limits (either 1,215 or 1,330 depending on the outfall) set by this Permit, both limits at or below a Tier 1 EC of 1,330 for alfalfa. Outfall 002 requires the treated water to be contained in a reservoir (the Paul3), and a local rancher on Wildcat Creek (Warren Adams) needs and uses all the CBM water out of the Paul3 that he can possibly obtain. Mr. Adams' previous use of untreated CBM water out of the Paul3 has substantially benefitted his ranching operation. Outfall 003 discharges directly into a perennial stream (Prairie Dog Creek) where there is flow year round into which such discharges are mixed. Ranchers on Prairie Dog Creek (the Brinkerhoffs who are members of the Prairie Dog Water Supply Co.) would also use the additional treated water from Outfall 003 for their ranching operation.

Against this backdrop of demonstrated beneficial use and clear desire for treated CBM water for irrigation, Petitioners, notably John Koltiska and his ranches, oppose DEQ's issuance of the Permit. He challenges DEQ's scientific methodology used to derive the effluent limits as well as the protectiveness of the EC, sodium and SAR effluent limits. The only real issue in this appeal is whether the effluent limits for EC and sodium imposed by the Permit, and the lack of an SAR limit, will be protective of irrigated alfalfa production under Ch. 1, Sec. 20. Petitioners have failed to present any evidence to challenge the protectiveness of the Permit limits, much less the substantial evidence required for the Council to reverse the Permit. Their experts simply lack the expertise and knowledge to address the issues Petitioners raise, and both experts fail to give an opinion that the already low Permit limits will not be protective of alfalfa irrigation under Ch. 1, Sec. 20. In an effort to distract the Council from these failures, Petitioners also raise a number of irrelevant issues that have no bearing on the protectiveness of the Permit limits.

II. Hydrologic Background of the Drainages

The Permit allows for discharge of treated CBM water into Prairie Dog Creek through Outfall 3 and into the Paul3 reservoir, an on-channel reservoir on Wildcat Creek through Outfall 2. The Permit requires full containment of effluent discharged into the Paul3 reservoir except during natural overtopping events. Prairie Dog Creek is a perennial stream that receives stream-flow contributions from a man-made transbasin diversion near the headwaters of Piney Creek, local basin runoff, and groundwater inputs. As Prairie Dog Creek flows north towards the confluence with the Tongue River in Montana, the EC and SAR level increase naturally due to irrigation return flows from CBM managed irrigation as well as other groundwater inputs. Petitioners divert water from Prairie Dog Creek via several ditches for irrigation purposes when the flow is high enough – typically 24 cfs to meet Petitioners' irrigation needs.

The Permit allows for discharge of treated CBM water into the Paul3 reservoir, an on-channel reservoir on Wildcat Creek through Outfall 2. The Permit requires full containment of effluent discharged into the Paul3 reservoir except during natural overtopping events. Wildcat Creek is a small tributary of Prairie Dog Creek but has fundamentally different hydrologic features. Wildcat Creek is an ephemeral prairie stream with moderate to high levels of salinity (EC 2,000 – 3,000). The lower portion of Wildcat Creek is dominated by the characteristics of Prairie Dog Creek when John Koltiska diverts irrigation water from Prairie Dog Creek to lower Wildcat Creek by means of Ninemile Ditch, which takes water from Prairie Dog Creek *above* Outfall 003 of the Permit.

III. Discussion of the Issues Presented

All parties agree that the Permit must be reviewed under the standard set forth in Ch. 1, Sec. 20 of the Wyoming Water Quality Rules and Regulations (WWQRR):

> All Wyoming surface waters which have the natural water quality potential for use as an agricultural water supply shall be maintained at a quality which allows continued use of such waters for agricultural purposes. Degradation of such waters shall not be of such an extent to cause a measurable decrease in crop or livestock production.

With this standard in mind, Petitioners allege that discharge of treated water in compliance with the Permit limits will result in a measurable decrease of irrigated alfalfa production. Petitioners do not allege that the Permit will cause a measureable decrease in livestock production.

A. Relevant Issues on Appeal

Petitioners allege that DEQ did not derive the Permit effluent limits in a scientifically appropriate method under WWQRR Ch. 2, Sec. 9. As explained in Pennaco's Motion for Summary Judgment and to Strike Expert Testimony, Petitioners' designated expert – Mr. O'Neill

– did not provide any qualified or credible testimony concerning DEQ's chosen methodology. Petitioners have produced nothing more than non-expert testimony disagreeing with the methodology DEQ employed to derive the Permit effluent limits. Moreover, Mr. O'Neill commits the mistake of equating an "appropriate" scientific method with a "best" scientific practice – an understandable but critical error since he has never read the applicable regulation before this appeal.

More importantly, the controlling issue in this appeal concerns the protectiveness of the limits. If the Permit effluent limits are protective under Ch. 1, Sec. 20, Petitioners are not injured regardless of whether DEQ's methods are subject to disagreement or criticism. DEQ did employ appropriate scientific methods to derive the permit limits, but the effluent limits are more than protective of irrigated alfalfa production regardless of method criticisms.

Petitioners allege – but do not demonstrate – that the effluent limits will cause a measurable decrease in irrigated alfalfa production. For Prairie Dog Creek, their claim through Dr. Vance appears to be that Pennaco's discharge and mixing with natural waters may *never* increase salt or degrade background water quality, regardless of the resulting mixed water quality. However, Petitioners admit, as they must, that the limited degradation standard provided in Ch. 1, Sec 20 does not require Pennaco to treat the discharge waters to background water quality. Rather, the Ch. 1, Sec. 20 standard allows for some degradation in background water quality so long as the change does not cause a measurable decrease in the production of irrigated alfalfa. Here, the Permit limits may result in a slight change in background water quality that is well below the protective EC and SAR limits of irrigated alfalfa production, and Petitioners have failed to present any evidence to the contrary. In fact, if Pennaco were to discharge the maximum permitted effluent quantity into Prairie Dog Creek with minimum irrigable flows

during irrigation season, at or near the Permit limits of 1,200 EC and 300 mg/L sodium, the resulting water chemistry would be an EC of 935 (up from a background EC of 814) and an SAR of 2.6. As irrigation flows increase, the mixed water quality only becomes better. Understandably, Petitioners' expert who advocates a zero degradation standard does not refute the lack of harm to alfalfa shown by such low numbers.

For Wildcat Creek, Petitioners do not have any problem with the permit limits for the actual permit conditions. In other words, if the discharges from Outfall 002 are contained in the Paul3 or if the Paul3 overtops during a storm event, Mr. Koltiska and his ranches (the only Petitioners affected by Wildcat Creek), have not alleged or shown a problem with the limits. Petitioners' main concern with Outfall 002 is that no SAR limit was set, which may be an issue only if the Paul3 reservoir is leaking into Wildcat Creek and reaching Petitioners' irrigated alfalfa. Petitioners then offer no expert testimony on whether an SAR limit is required for Outfall 002 (or Outfall 003 for that matter), and instead focus their efforts on the irrelevant allegation that the Paul3 reservoir is leaking into Wildcat Creek.

B. Irrelevant Issues That Should Not Bog Down the Council

Though Petitioners did not raise the following issues in their Amended Petition, Petitioners argue that the Paul3 reservoir is leaking. They may also attempt to challenge or question Pennaco's treatment facility. These issues are irrelevant and beyond the scope of this appeal in determining the central issue of whether the Permit effluent limits are protective of irrigated alfalfa production.

If the Paul3 is actually leaking into Wildcat Creek beyond a nearby pumpback station, DEQ would consider that circumstance a violation of the Permit and take action accordingly.

DEQ has concluded that water getting from the Paul3 to the nearby pumpback is not a Permit violation. These are *separate decisions* by DEQ from the Permit limits and have nothing to do with the protectiveness of those limits and nothing to do with Petitioners' challenge of those limits. Aside from that, the Petitioners' allegations regarding the Paul3 reservoir leaking into Wildcat Creek are simply unfounded. In response to Petitioners' concerns about the Paul3, Pennaco conducted isotopic and other water chemistry sampling/analysis in Wildcat Creek to confirm the containment integrity of the Paul3 reservoir. The isotopic testing confirmed that CBM water in the Paul3 was not infiltrating beyond a small pool at the toe reservoir wall (called the "Pumpback"). Prior to the isotopic testing, DEQ investigated this issue and also determined that a small amount of CBM water was seeping from the base of the reservoir wall but was not infiltrating into upper Wildcat Creek. DEQ ordered Pennaco simply to pump the seepage water collecting at the toe of the Paul3 into an off-channel reservoir adjacent to the Paul3. Mr. Koltiska did not challenge DEQ's enforcement decision then, and Petitioners cannot use this permit appeal as a backdoor challenge to a previous DEQ decision.

As to Pennaco's treatment before discharge, Petitioners' evidence suggests that they may want to discuss the techniques by which Pennaco will achieve the Permit limits or whether the treatment processes used by Pennaco may be capable of achieving lower limits than prescribed by the Permit. Those issues are flatly irrelevant, and the Council should not take the bait to stray from the core issue – whether the permit limits for EC and sodium protective of irrigated alfalfa.

C. Pennaco's Expert Report Establishes that the Permit is Protective

Though the burden of proof lies with Petitioners, Pennaco's expert report demonstrates that the Permit limits set by DEQ are well within protective limits for irrigated alfalfa production. Pennaco designated Dr. William Schafer as its expert on this issue. Dr. Schafer

concluded that the EC and sodium limits contained in the Permit are protective of irrigated alfalfa production in Prairie Dog Creek and Wildcat Creek. Dr. Schafer analyzed and derived permit limits somewhat differently than the method used by DEQ, but at the end of the day, his analysis and recommendations prove that DEQ's limits are protective of irrigated alfalfa production – in fact, DEQ's limits set in the Permit are overprotective.

1. Appropriate Scientific Methodology

The EC limit for Outfall 003 on Prairie Dog Creek was derived based on preserving water quality of the Tongue River in Montana and protection of alfalfa production in Prairie Dog Creek. To calculate this EC value, DEQ used a reach-average EC for determining ambient conditions in Prairie Dog Creek. DEQ calculated the stream's reach-average by combining 30 field EC measurements from the Wakeley USGS Station near Sheridan, Wyoming (Wakeley) with 26 field EC measurements from the Acme USGS Station near the confluence with the Tongue River (Acme), and 2 EC field measurements from a station located near Outfall 003. DEQ also relied lab data from a subset of the Wakeley and Acme measurements.

Dr. Schafer acknowledged that more than one appropriate method exists to derive reasonable effluent limits, but the best measure of acceptability of an effluent limit is to determine whether the limit is protective of the intended use of the water. Mr. O'Neill, despite his unfamiliarity with the applicable regulation (Ch. 2, Sec. 9), rendered three opinions on DEQ's methodology for setting EC and sodium limits for Outfall 003: (1) that DEQ should not have used both field and laboratory water quality data for Prairie Dog Creek to set an EC limit; (2) that DEQ should have used only Wakeley water quality data rather than Wakeley and Acme data for Prairie Dog Creek; and (3) that DEQ used an inadequate correlation between SAR and sodium to set a sodium limit. As to these non-expert opinions, Dr. Schafer found that: (1) if

DEQ had only used the set of field data from Wakeley and Acme (and not field and lab data), EC for the reach of Prairie Dog Creek from Wakeley to Acme would have averaged 1,246 EC (a figure 2.5% *higher* than DEQ's average of 1,215 EC used to set the Outfall 003 EC limit); (2) if DEQ had only used the water quality data from Acme, closer to Montana, to protect the Tongue River, median EC would have been 1,520, resulting in DEQ selecting an EC of 1,330 under Tier 1 as fully protective of alfalfa (a figure *higher* than the 1,215 EC used by DEQ to set the Outfall 003 limit); and (3) even though the relationship used by DEQ to set the sodium limit could be criticized, a proper correlation between SAR and sodium still reveals that a sodium limit of 336 mg/L is protective (a figure *higher* than the 300 sodium limit set by DEQ for Outfall 003). In summary as to methodology, Dr. Schafer concluded that DEQ's methodology was overly protective of limits necessary to prevent a measurable decrease in irrigated alfalfa production.

Dr. Schafer also concluded that DEQ's analysis of SAR limits and sodium concentrations was scientifically appropriate for Outfall 002. The Permit does not set a SAR limit or sodium concentration for Outfall 002 into the Paul3 reservoir. The Paul3 has a restriction that all effluent must be contained in the reservoir except during a runoff event that causes overtopping. In the unlikely scenario that an overtopping event actually occurs, ample surface water would exist in area drainages to provide dilution, and the overtopping waters would consist of a mixture of treated CBM water and natural runoff water. Accordingly, DEQ was justified for not imposing an end-of-pipe SAR or sodium concentration limit. In any event, Petitioners' experts do not render an opinion on whether a sodium or SAR limit should have been set for Outfall 002, focusing instead on irrelevant opinions that the Paul3 leaks into Wildcat Creek.

2. The Permit limits are protective of irrigated alfalfa production.

Dr. Schafer modeled water quality changes caused by Outfall 003 using a modeled maximum discharge of 1,215 permitted EC and three dates reflecting irrigation season in April, may and July. The modeling results demonstrated that water discharged from Outfall 003 would cause a slight 2% to 10% increase in EC values downstream of the outfall to approximately Prairie Dog Creek's confluence with Dutch Creek. Below Dutch Creek, however, Outfall 003 actually caused a *decrease* in EC ranging from 5% to 15%. Dr. Schafer's load modeling results confirmed that the EC limit of 1,215 for Outfall 003 on Prairie Dog Creek is protective of irrigated alfalfa production because the EC never exceeds 1,330 in middle reaches of the creek where EC is naturally below 1,330. In the lower reaches of Prairie Dog Creek where the EC can naturally exceed 1,330, addition of treated water from Outfall 003 actually tends to decrease the EC. Further, at a minimum irrigation flow, adding the maximum permitted effluent at 1,200 EC and 300 sodium would result in mixed water chemistry at Outfall 003 of an EC of 935 (up from 814 background) and an SAR of only 2.6 (and an EC/SAR ratio not above the Hanson Chart restrictions line). As irrigation flows increase, the mixed water quality only becomes better. This load modeling demonstrates that the permit limits for Outfall 003 are protective of irrigated alfalfa.

The Permit limits for Outfall 002 are also protective. DEQ developed an EC limit of 1,330 for Outfall 002 into the Paul3 reservoir. Water samples taken on Wildcat Creek in 2008 revealed a median EC level of 2,670. The EC limit for Outfall 002 therefore requires water discharged into the Paul3 reservoir to have a much lower EC than background water quality of Wildcat Creek. Pennaco did not dispute the effluent limit of 1,330 at Outfall 002 even though a

much higher limit would have been protective. The Permit only allows the Paul3 reservoir to discharge into Wildcat Creek during a runoff event that causes overtopping. There is no recorded overtopping event since the Paul3 has been used for CBM storage. Petitioners do not challenge the Permit limits for a containment or overtopping scenario; their only challenge is to the limits based on a reservoir leaking into Wildcat Creek scenario. As already noted, such a scenario would not be allowed by the Permit anyway and is therefore irrelevant to the protectiveness of the Permit limits. Moreover, Petitioners cannot demonstrate that the Paul3 is leaking into Wildcat Creek.

Though this issue of leaking should not be part of this Permit appeal, Dr. Schafer conducted common ion and isotopic sampling in June 2009 and established that CBM water is not contributing to upper Wildcat Creek. The common ion water chemistry differences between CBM water in the Paul3 and surface water in Wildcat Creek shows no leakage (and Dr. Vance agrees). Moreover, the carbon, oxygen and deuterium isotope results further convinced Dr. Schafer that surface water in Wildcat Creek is not from the Paul3 reservoir. In any event, if the Paul3 were leaking, it is actually improving water quality in Wildcat Creek and not reaching John Koltiska's irrigated alfalfa anyway. This "issue" of leaking is a "red herring" for this Permit appeal to mask Petitioners' failure of evidence on the core issue of protectiveness of permit limits under Ch. 1, Sec. 20.

IV. Conclusion

The controlling issue in this permit appeal turns entirely on the protectiveness of the Permit's effluent limits for EC and sodium. The Section 20 standard does not require Pennaco to treat its discharge to background water quality levels. Petitioners have failed to present any evidence, much less substantial evidence on which the Council could reverse the Permit, to show

that the Permit will lead to a measurable decrease in the production of irrigated alfalfa. Moreover, Pennaco – through Dr. Schafer's expert report – has established that the Permit effluent limits will prevent any decrease in irrigated alfalfa production. DEQ issued a valid Permit that is protective of irrigated alfalfa production, and Pennaco respectfully requests the Council affirm the Permit.

Respectfully submitted November 4, 2009.

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CERTIFICATE OF SERVICE

I hereby certify that on November 4, 2009, I served the foregoing PENNACO ENERGY, INC.'S PREHEARING MEMORANDUM to the following by:

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