

ENCOURAGING RESPONSIBLE DEVELOPMENT TODAY - FOR TOMORROW

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Jim Ruby, Executive Secretary
Environmental Quality Council

WY Environmental Quality Council
c/o DEQ/Water Quality Division
ATTN: David Waterstreet
Herschler Building - 4W
122 West 25th Street
Cheyenne, WY 82002

RE: Agricultural Use Protection Policy, Water Quality Standards for Livestock and Wildlife

Dear members of the Wyoming Environmental Quality Council,

On behalf of our approximately 1,000 members, we are submitting the following comments on the latest round of revisions regarding DEQ's proposed "Agricultural Use Protection Policy" and the proposed Water Quality Standards for protection of livestock and wildlife. We thank you for the opportunity to submit these comments. We also wish to express our frustrations with the failure of DEQ and the Water and Waste Advisory Board to generate any truly substantive agriculture protection policy in any of the seven earlier versions generated over more than three years time.

This so called "Ag Protection Policy" is in reality a rationale for permitting pollution and destruction of existing Wyoming resources. Its implementation would memorialize the destruction and/or taking of property, specifically soil and vegetation, without compensation and for the sole purpose of assisting the gas industry in disposing of their wastewater product at the lowest possible cost. The DEQ is already operating under this misguided policy, and is permitting the discharge of pollution that has damaged, and will continue to damage, our crop and livestock production without compensation. This is classic externalization of costs that should be borne by industry or the taxing authorities, but which are in fact being placed directly on others: private and public landowners.

Specifically, we have the following comments on Appendix H:

Pre-1998 discharges

P. H-1 exempts effluent sources already existing prior to 1/1/98 from these proposed requirements. We ask DEQ to respond to concerns of landowners and lessees. Due to management changes or water chemistry alterations over time, water quality of older discharges

may well degrade and become problematic. We suggest additional language to read: "Where landowner or lessee asserts evidence of crop or grazing land damage or health threats to livestock and wildlife, DEQ shall establish effluent limits to protect these uses.

Livestock Watering

We note that WDEQ has failed to require that effluent limitations for water chemistry be established within levels safe for livestock and wildlife as recommended by M.F. Raisbeck DVM, et al in "Water Quality for Wyoming Livestock and Wildlife" (University of Wyoming, 2007). The following quotations cited are from this study.

Sulfates

"Assuming normal feedstuff S concentrations, keeping water SO₂/4 concentrations less than 1800 mg/l should minimize the probability of acute death in cattle." Concentrations less than 1000 mg/l should not result in any easily measured loss in performance."

DEQ proposes a limit of 2,000 mg/l, down from 3,000, but twice that recommended by the UW study. If this standard stands and the University of Wyoming is correct, DEQ would permit discharges that cause "easily measured loss in performance" and "probability of acute death in cattle."

Fluoride

"We recommend that water for cattle contain less than 2.0 mg/l F- (2,000ug/L). By extension, these waters should also be safe for sheep, cervids and probably horses."

DEQ's proposal is 4,000 ug/L, twice that suggested by UW, and above that cited as "safe" for sheep, deer and elk, and probably horses. We urge the Council to follow the UW recommendation for fluoride.

Arsenic

"We recommend that drinking water for livestock and wildlife not exceed 1mg As/L."

Why has this recommended livestock and wildlife limit for Arsenic been eliminated from DEQ's earlier February 2007 version? The Raisbeck study recommends a limit of 1mg/l and we urge the EQC to include an Arsenic limit no greater than that recommendation.

Na – Sodium

"Therefore, assuming water consumption typical of a rapidly growing steer and only background feed Na concentrations, the no effect level would be about 1,000 mg Na/L or 2500mg NaCl/L. Serious effects, including death, become likely at 5,000 mg Na/L. We recommend keeping drinking water Na concentrations less than 1,000 mg/L."

This specific water chemistry citation was not contained in previous versions of Appendix H. However, due to the potentially high concentrations of sodium in discharge waters, we urge the Council to include this limit for sodium at no greater than 1,000 mg/l.

TDS

"Total Dissolved Solids in drinking water serves as a very poor predictor of animal health. However, if no other information is available, TDS concentrations less than 500 mg/L should ensure safety from almost all inorganic constituents. Above 500 mg/L, the individual constituents contributing to TDS should be identified, quantified and evaluated."

Based on the above comment we would urge the EQC to bring TDS down from the current 5,000 mg/L to something a little more reasonable.

We request that the Council look carefully at the UW recommendations and that Dr. Raisbeck be invited by the Council to discuss the findings of the review and recommendations from the literature review and study conducted by him and his associates.

Naturally Irrigated Lands

We continue to protest the grossly limiting requirements that define Naturally Irrigated Lands as "significant" or not significant. The proposed narrow definition of significance ignores the productive capacity and collective significance of scattered range bottomlands which may be each less than 20 acres in size. These might not be in direct proximity and may well be less than 50 feet in width, but nevertheless are critical to ranching operations and wildlife use, especially as quality forage sources in spring and early summer. Measurable decreases in productivity and forage production continue to occur in these critically important grazing lowlands where effluent discharges are often conveyed. We urge this language change:

"All draws and bottomlands that provide forage yields that are greater than that of surrounding natural upland sites must be protected."

The definition of "naturally irrigated lands" should delete the requirement that the channel be "underlain by unconsolidated material and on which the combination of stream flow and channel geometry" are the only elements considered for definition of enhanced productivity. Range bottomlands and draws which offer significant production greater than that of the surrounding uplands mentioned above may not fall within this overly strict definition, yet they are significant contributors to cattle and wildlife production, and thus must be protected.

P. H-2 (iv) cites permit limits set only for other relevant water uses. This appears to ignore language under (B) which defines "Naturally Irrigated Lands." The language should read as follows: "(iv) If there are no pre-existing diversions or naturally irrigated lands within reach of a discharge..." Areas of consideration need to be restated here.

Tier 1 Default Limits

Where, "Default limits for EC and SAR may be used where the quality of the discharge water is relatively good or irrigated crops are salt tolerant." Use of the permissive "may" is not a protective measure that assures maintenance of the existing condition. The word "shall" must be substituted to avoid harm and reduce risk.

We urge that default limits for discharges should not exceed an EC of 1,330 or an SAR of 5. We continue to assert that these limits are absolutely necessary, based on scientific literature that

demonstrates the need for these more protective default limits. We propose default limits not to exceed an SAR of 5 and an EC of 1,330 in order to provide protections for current and existing agricultural uses.

As evidence we cite the June 30, 2006 study conducted by the USDA Salinity Laboratory and based on Powder River Basin soils. This study indicates that an SAR above 2 will start to impact certain soils common to the basin and that significant impacts emerge when SAR exceeds 4. The report states on page 51:

“For the bare clay soil even an increase from SAR 2 to SAR 5 resulted in a significant increase in infiltration time (decrease in infiltration rate), while for loam soil the increase in infiltration time was significant at the SAR 6 level. For cropped soil the variance was higher and differences were statistically significant at SAR 6 when paired tests were made. However, the fitted regression model showed decreases in infiltration are predicted for both bare and cropped clay soil and for cropped loam soil as the SAR increased from 2 to 4. For bare loam soil the model was non linear and the decrease in infiltration rate starts above SAR 4.”

Evaluation of Water Quality Criteria for Rain-Irrigation Cropping Systems
Donald L. Suarez, James D. Wood and Scott Lesch, Salinity Laboratory USDA-ARS.
Final Report to EPA, June 30, 2006

We request that DEQ make this entire study available to the Council for review and as part of the record. If necessary we can again provide this study to the DEQ and Council.

Year-Long Limits Apply

Salts and sodium applied during non-irrigation seasons are still absorbed and remain in the soil profile, causing the same level of problems during subsequent growing seasons. Therefore, it is illogical to apply EC and SAR limits only during certain seasons of the year. These limits must apply year-round to effectively protect agricultural uses and prevent the build up of salts and sodium in the soil.

Tier 2

We oppose the “Tier 2” concept as scientifically invalid. Tier 2 provides no real protection to soil or vegetation and is simply an unscientific rationalization devised by industry to justify high EC and SAR levels in permits. The Tier 2 concept involves arbitrary and scientific invalid soil sampling, the incorrect application of the Hanson diagram (which was never intended for use on such discharges), the use of an incorrect equation to establish SAR and the misapplication of that incorrect equation.

This voodoo pseudoscience has been demonstrated in the Tier 2 studies conducted to date that take soil samples deep in the soil profile where salts tend to reside and then use this soil data to average with other soil samples, establishing an alleged “background or baseline” water quality that is actually a chimera – a statistical artifact that gives an entirely misleading and useless understanding. Soils tested this way for a Tier 2 analysis by industry consultant K.C. Harvey have resulted in EC’s as high as 6,000 and SAR’s over 25. For example, a recent industry Tier

2 study by K.C. Harvey on Beaver Creek resulted in DEQ proposing an EC permitting level of 5,070. In contrast, A Tier 2 analysis and sampling in an adjacent drainage, Dead Horse Creek, done apparently more logically and with a better sampling design by DEQ themselves, indicated a proposed EC of 2,310.

It has been further demonstrated to DEQ that they are using an incorrect equation to establish the SAR. This equation apparently came from an Ayers and Westcott diagram published in Hanson et. al in 1999. The equation DEQ is allowing industry to use in Tier 2 to establish SAR is: $SAR < (7.10 \times EC) - 2.48$. According to research by soil scientists Dr. George Vance and Dr. Jim Oster, this equation was published incorrectly in the 1999 Hanson version. George Vance, PhD., University of Wyoming soil scientist provided us with the correct equation and we have provided it to DEQ. The correct equation is: $SAR < (6.75 \times EC) - 3.71$. If we use the previous example of the proposed permit on Deadhorse Creek, the corresponding SAR with DEQ using their incorrect equation results in an SAR of 13.9, using the correct equation results in an SAR of 11.8.

Can you imagine what would happen if NASA scientists, the FDA, or your anesthesiologist stubbornly used incorrect equations? Why does DEQ insist upon using this one?

Powder River Basin soils are predominately clay soils and it is common and scientifically validated knowledge that the application of high salinity and sodium on these soils will cause irreversible and long-term damage. We oppose the use of Tier 2 as nothing more than mechanism devised by industry and DEQ to permit the application of salts that will damage our soils, under a false rationale. The depth of gathering soil samples and averaging as applied in these Tier 2 "studies" has skewed the true soil data of sites in favor of much higher EC and SAR ambient levels. The sampling technique used is not worthy of a sophomore in a level 100 analysis course. Averaging is scientifically unacceptable, for it generates a false representation of the upper soils, which are less salt and sodium laden and therefore more productive and less tolerant to pollution. The extreme variance between fields and within sample sites, combined with these faulty sampling and analytical methods, allows degradation of soils to a lowest common denominator.

We ask the Council to provide us the opportunity to bring the expertise of Dr. George Vance on these issues and concerns to the Environmental Quality Council. He will clearly explain the complexity of soil sampling, the variations that can occur with incorrect sampling methodology and the use of the equation to establish an SAR. Further, Dr. Vance will discuss the improper application of the Hanson diagram for establishing EC and SAR levels in this case and has agreed to make every effort to be available before the Council.

It is clear that, as derived by DEQ, "Tier 2" is a loophole and fails to meet the requirements of the Clean Water Act to protect current and existing uses. Failure to correct these methodologies and concepts would certainly lead to litigation delaying CBM development in many areas.

Tier 3

We are not certain how Tier 3 would be implemented by DEQ. Please explain how Tier 3 would be in compliance with the Clean Water Act?

Irrigation Waivers

We must object to the allowance for these waivers. DEQ proposes that discharged EC and SAR levels in excess of normal DEQ standards can be allowed by landowner request. We are very respectful of the property rights of those requesting waivers; however, they disregard the rights of those onto whose lands these waters may subsequently flow, including in many cases, public lands. Overall, they open another door to the potential for very long-term damage to soils and vegetation. Effluent with over-limit EC and SAR levels should be positively halted from entering another downstream landowner and damaging non-target property and resources, regardless of what rights an upstream landowner wants to waive in regards to his own land. An upstream neighbor must not be allowed to waive a downstream neighbor's rights to environmental protection under the law.

Reasonable Access Requirement

Landowners must be free to exercise their rights to refuse access without suffering harm for exercise of those rights. DEQ proposes to use the "best information." We urge DEQ to include in "best information" the testimony of landowners, and to use published limits to assure that the most sensitive crop grown in this area will not be harmed. We urge DEQ to do their utmost in determining protective standards for EC and SAR. We do appreciate the change in language from previous unconstitutional threats that "limits may not be required" where access is denied.

Public Hearings

If nothing else, the huge volumes of effluent generated by CBM discharges in the Powder River Basin should focus the policy emphasis where large volume flows accompany the extraction of CBM gas. Because of these impacts, we would urge that public hearings be held in the Powder River Basin in addition to other Wyoming locations.

We believe that this exercise presents an opportunity for the EQC to build truly protective policies for agricultural operations and for public and private lands impacted by various energy-related discharges. We are disappointed that DEQ has not managed to seize the day over the last three years and draft a policy that lives up to its title, but we are gratified that the effort now rests with an organization that is well equipped to deliver DEQ from its own shortcomings, and to produce a true "Agricultural Protection Policy."

We look forward to the outcomes of this process and offer any assistance we may provide in those efforts.

Sincerely,



Robert LeResche, PhD
Chair, Powder River Basin Resource Council