DEPARTMENT RECOMMENDATIONS FOR BOARD ACTION ON CBM RULEMAKING

The Department has developed recommendations for each of the provisions of the proposed rules. The recommendations follow in the order established by the rule notice.

Amendment of ARM 17.30.670 NUMERIC STANDARDS FOR ELECTRICAL CONDUCTIVITY (EC) AND SODIUM ADSORPTION RATIO (SAR)

Sections (6), (7) and (8) of this rule are proposed for amendment.

Section (6) of this provision would designate EC and SAR as harmful parameters, thus establishing significance thresholds at a portion of the numeric water quality standard. The Department could not authorize a discharge exceeding 10% of the numeric standard, without an authorization to degrade. If the ambient water quality is 40% of the standard or above, no additional discharge could occur without at authorization to degrade.

The Department recommends adoption of section (6) of this rule.

The intent of Montana's nondegradation rule is to protect the increment of "high quality" water that exists between ambient water quality and a numeric water quality standard. The Board has a duty to protect that high quality water where it does exist, including waters such as the Tongue River and Rosebud Creek in the Powder River Basin.

When the Board established numeric standards for EC and SAR, the Department recommended that the Board leave the narrative nondegradation thresholds in place. The Department argued that the waters of the Powder River Basin sometimes exceed the water quality standard, so a conventional approach to nondegradation was not justified. The Board found that the Department's argument was true for the Powder River, but not the Tongue. The Board requested, for further consideration, Department review of the nondegradation designation, and passed a two-part motion to adopt the nondegradation approach previously adopted in 2003. The first part was to adopt the recommended approach that is now in rule; the second component was to "... direct the Department (to) initiate rulemaking on a different method ...."

The current treatment of EC and SAR as narrative standards for the purposes of nondegradation is inconsistent. All other parameters that have numeric water quality standards are classified as carcinogenic, toxic or harmful for purposes of significance reviews and the Department feels that EC and SAR should be treated in a similar manner. The Department feels that further consideration and the evidence submitted in the current rulemaking supports treating EC and SAR as harmful parameters for the purposes of nondegradation review.

Section (7) of this rule contains the requirement for the use of flow-based dilution when calculating MPDES permit discharge requirements. The proposed rule deletes this requirement and adds a requirement to use the 7Q10 flow, a flow value associated with a river's lowest typical flow, to calculate permits.

The Department recommends that the Board adopt the rule deleting the requirement to use a flow-based permit calculation method, but that the Board NOT adopt the new requirement to use the 7Q10 flow. The MPDES section in Permitting Division has the discretion to use either method for calculating approved discharges for other dischargers, and has used both. Eliminating the requirement to use a flow-based approach, and not replacing it with the 7Q10 requirement, will preserve Department discretion to use either, or a combination of the two, and make the analysis and calculation of CBM produced water permits consistent with the other MPDES efforts.

Section (8) of this rule contains the nonseverability provisions of the existing rule. The proposed rule deletes this provision.

The Department recommends that the Board adopt this provision, which would result in deletion of the nonseverability clause.

The nonseverability requirement was originally recommended by the Department and adopted by the Board at industry's request to prevent a situation in which the narrative nondegradation criteria was struck down in a court of law, leaving only the numeric water quality standards in place. Since the Department is now recommending replacement of the narrative nondegradation threshold with a conventional numeric approach, the nonseverability provision is not necessary.

Amendment if 17.30.1202 Definitions

The Department recommends that the Board NOT adopt changes to the definitions. The proposed changes implement the technology based controls and treatment requirements in the new rules which follow. The Department is recommending that those rules not be adopted.

New Rules I through X, including zero discharge, technology based control, treatment, and effluent guideline requirements.

The Department recommends that the Board NOT adopt the new rules requiring reinjection or treatment of CBM produced water to an established set of effluent limit guidelines.

Strict requirement of technology based effluent limits requires the Department to analyze and establish the technical and financial feasibility of achieving the limits. The record before the Board does not establish the technological or economic feasibility of the proposed limits.

The Department is willing to consider whether there exists a set of effluent limitations that is economically, environmentally, and technically feasible. The Department recommends that the Board either (1) reject the effluent limitations as proposed in the notice of hearing on these rules and request the Department to return to the Board, after performing the above analysis, with proposed effluent limitations and documentation of the technical, economic, and environmental feasibility and cost-effectiveness of those effluent limitations or (2) issue a supplemental notice to take further evidence regarding the economic, environmental, and technical feasibility of treatment to determine whether there are effluent limitations that are economically, technically, and environmentally feasible, and, if so, identify those limitations.

COMMENTS ON ECONOMIC IMPACT STATEMENT AND RESPONSES

COMMENT NO. 1: Several comments express concern about the high costs of injection wells and the expense of gaining a waiver from the injection requirement if the petition were to pass as law. There was also concern about the "concentrate" that results from the advanced water disposal techniques mentioned in the petition such as ion exchange and the challenges (economic and environmental) associated with disposing that concentrate.

RESPONSE: The concentrate that results from advanced water treatment would require additional infrastructure including additional roads, storage tanks, and significant tanker traffic. Also, obtaining a waiver for mandated injection could pose a significant timing, legal, and financial cost to operators that was not considered in the economic impact statement.

COMMENT NO. 2: Several commentors stated that an economic impact analysis must include consideration of not amending the rule, effects of methane water on contracts with DNRC for water rights, the purchase of water for leaching fraction to meet current SAR standards, the economic loss associated with methane-related water effects on clay, the loss of groundwater and costs of water well replacement including power supply, the replacement of senior water rights with junior water rights as a result of a changing water table, the reclamation of pond sites, and fishery values.

RESPONSE: The effects of not amending the rule were covered in the section of the DEQ Impact Statement entitled, "Baseline Scenario without the Petition" that estimates what would happen to the methane industry without the rule (or how the industry and state of Montana would proceed under current law). The issues of economic loss associated with effects on clay, loss of water and costs of water well replacement including power supply, reclamation of pond sites, and fishery values are discussed in the "Benefits of the Proposed Rule" section of DEQ's statement. Generally, however, the water quality standards presently in place will protect these uses.

COMMENT NO. 3: One commentor stated that the cost of doing business associated with petition requirements will be passed on to the consumer who also pays for the agencies to administer the rules.

RESPONSE: Comment noted.

COMMENT NO. 4: Some commentors stated that the petition would completely shut down methane development in Montana and some felt that it would significantly limit methane production in Montana. In addition, other comments stated that the rule would have little or no effect at all on methane production and that the petition was economically feasible. Several opponents of the proposed rule hired a consultant, Energy and Environmental Analysis, Inc. (EEA), to perform their own economic analysis as to the adverse economic effects of the proposed rule, and other commentors cited that study. The adverse impacts to the industry, Montana and the U.S. estimated by EEA were significantly greater and more widespread than what was concluded in DEQ's economic impact analysis. In addition, the EEA analysis estimated a rise in natural gas prices in the entire U.S. as a result of the rule.

RESPONSE: The economic impact statement presents three scenarios. In two of them, gas production does not go down under the proposed rule. In the third scenario, production is cut by 20% in Montana. The numbers in the economic impact statement are based upon assumptions of what the future would look like with and without coalbed methane. These assumptions are provided at the beginning of the paper and are explained more thoroughly in Appendix A of the paper. Wherever possible, conservative numbers were used to prevent underestimating the costs of the petition to industry and Montana. In addition, the department's analysis was completed in a timely manner and was posted for public review for the comment period. It is unfortunate that, despite the fact that the Board extended the rule schedule by two months at industry's request, the EEA report was never made available for public review. The EEA report was instead submitted with written comments. Peer review of the EEA report would be necessary to validate its assumptions and conclusions.

It does not appear that the proposed rules would completely shut down the methane industry in Montana or that the petition would significantly raise gas prices in the U.S. At the present time, one company in Montana is already using treatment to state standards to handle all of its water. Another producer is proposing and has been permitted to treat to standards, so water treatment to state standards is clearly economically feasible. There is not information in the record from which to conclude that treatment to the proposed effluent limits is feasible.

While the Powder River Basin is an important source of natural gas in the U.S., it is estimated to be a small percentage of future total annual gas production in North America. The average loss in annual gas production in the Powder River Basin as a result of the rule is estimated by EEA to be just under 60 Bcf per year on average through 2025 which, while significant, is less than 0.3% of estimated future annual North American production (estimated to be greater than 20,000 Bcf per year by the U.S. Energy Information Administration). This does not seem like a large enough percentage drop to raise U.S. natural gas prices by any significant amount. Another problem with EEA's report is using only one or two sources upon which to base their water treatment costs. However, one reason for the use of very high treatment costs in the report is probably basing those costs on the proposed effluent guidelines. Again, there is not information in the record from which to conclude that treatment to the proposed effluent limits is feasible. The EEA report also misuses the "economic multiplier effect" to inflate the costs of the proposed rule, double and triple counts the costs of the rule if one were to use accepted benefit-cost analysis rules, and overstates estimated job loss.

Interestingly, the results from the recent U.S. DOE study (i.e. reductions in gas production as a result of the rule) that is quoted in EEA's paper as a study to use, roughly match the 'worst case scenario' results in the economic impact statement, if advanced treatment and injection were required.

COMMENT NO. 5: Several commentors were concerned about increased administrative costs to state agencies such as DEQ if the rule were to pass. Some felt that the costs would be significant, and some thought that industry could pay for them.

RESPONSE: In the economic impact statement, it is mentioned that there might be some additional costs to state government, specifically DEQ, from the petition including changes in monitoring or MPDES permits. It is also stated that compared to

the total water quality protection costs currently borne by the state of Montana, additional costs from the petition are likely to be insignificant and might consist of one additional FTE needed by DEQ.

COMMENT NO. 6: There were several comments that mandatory injection under the proposed rule would have many adverse economic and environmental consequences not mentioned in the economic impact analysis including significant numbers of additional injection wells, additional roads built, increased traffic, loss of surface water for beneficial use (including use by area coal mines), new well pads, additional pipelines and related land disturbance. Concern was especially given to the fact that the petition would restrict beneficial methane-related water use to livestock watering only, resulting in lost beneficial use of methane water to other applications like coal mining, irrigation, and fisheries.

RESPONSE: All adverse consequences from injection should be taken into consideration, and these environmental costs from injection are being considered. In the economic impact statement, the assumption is that 80% of methane water would not be injected, but instead would be treated and discharged on the surface. Limiting beneficial uses of methane water to stock watering will result in costs that include loss of that water for coal mine dust suppression, carefully managed irrigated agriculture (where appropriate), and other uses. However, it is not appropriate to place a value on all methane-produced water as the value of lost beneficial use, as one commenter recommended. Currently, the majority of the volume of current methane related water is not being used for beneficial uses, and the majority of future volume of methane-related water will probably not be used beneficially. Furthermore, accurate estimation of the monetary value of all potential beneficial uses of CBM produced water would require surveys, modeling and other analytical tools for which DEQ had neither the resources nor time, given the need to have the DEQ analysis available for public review during the comment period.

COMMENT NO. 7: Several comments indicate that coal bed methane has the potential to re-energize the area's economy. Examples include tax revenues and dedicating portions of after-tax profits to building healthy communities and benefits to education.

RESPONSE: Coal bed methane would create economic benefits in the Powder River Basin area of Montana. The economic impact statement reflects this.

COMMENT NO. 8: EEA (the writers of the alternate economic analysis paper), they addressed what it felt were flaws in the economic impact statement. These include: 1) the opinion that using average methane well costs understates the proposed rule's adverse impact on economically marginal wells; 2) a failure to address the adverse economic consequences of restrictions on beneficial uses other than stock watering; and 3) a failure to discount the value of time as is often done in economic studies

RESPONSE: Given the time and staff limitations of completing the economic impact statement, simplifications had to be made to make the analysis efficient and to insure that the report would be available for public review during the comment period. Using average costs, a necessary simplification in the impact statement, understates the

proposed rule's adverse impact on economic marginal resources-especially in the best and middle case scenarios. Some of the lowest producing wells will be not drilled with even a slight increase in costs brought on by the proposed rule for all three scenarios in the economic impact statement. Therefore, in the best and middle case scenarios in DEQ' statement, the number of wells drilled would fall slightly as a result of the rule and a few jobs, income, and tax revenue could be lost as a result. These costs were not included in the impact statement.

As mentioned earlier, limiting beneficial uses to stock watering only will result in costs that include loss of that water for coal mine dust suppression, carefully managed irrigated agriculture (where appropriate), and other uses.

Due to limited time and resources, the study does not incorporate time discounting-even though that is a common technique used in economic analysis. Discounting time gives the present value of money and resources more importance than the future value of money and resources. If it were used in the economic impact statement, the results would reflect greater costs to industry as a result of the proposed rule (because it would delay development to an extent) and would result in lower benefits to future water and resource users (local landowners) than what is currently reflected in the impact statement.

COMMENT NO. 9: EEA commented that the economic impact statement fails to include the required analysis of alternative methods of regulations to the proposed rule.

RESPONSE: Section 2-4-405(1)(f) requires the economic impact statement to analyze any alternative methods to achieve the purpose of the rulemaking that were seriously considered by the agency (the Board) in making the decision to initiate rulemaking. In making that decision, the Board did not consider any alternative methods.

COMMENT NO. 10: One commenter noted that the study does not place a value on water, even though it places a value on the gas. It was noted that for the commentors, water is more valuable than gas and that it is distressing to see large quantities of water flowing downstream as a result of methane development.

RESPONSE: In the 'Benefits of the Petition' section of the paper, the value of water is discussed, but no monetary value is put on the water, for reasons discussed earlier. Interestingly, some commentors wanted to use the value of water for the opposite argument in order to demonstrate that using water quickly for methane development is the most valuable use of it for society if one uses the time discounting method. Thus, differing values areplaced on water by different parties.

COMMENT NO. 11: One comment mentioned that DEQ's analysis understates water management costs for the proposed rule by applying treatment costs not matched to the stringent BER effluent limits and by using injection costs inappropriate to the Powder River Basin geology. There was also concern that by using 2002 methane operator cost data and adjusting those costs to 2005 by using inflation, that the economic impact study underestimates the costs of operating methane wells and of using more advanced water treatment because those costs have risen more quickly than inflation in the past three years. There was a feeling that DEQ's cost data and other supporting information is

outdated and doesn't accurately reflect current conditions, including the recent high cost of inflation in the oil and gas sector.

RESPONSE: As previously discussed, the significantly higher costs of water treatment that industry quotes are probably based on the proposed effluent limit guidelines in the rule. The conclusions in the EEA report would require peer review for verification. Again, however, the Board does not have information in the record from which to conclude that treatment to the proposed effluent limits is feasible. The treatment costs included in the economic impact statement are based on methane companies discharging at present levels of water treatment (state standards at end of pipe). If the draft rule's stricter effluent limits were used, differences would come from how much or how little produced water could be mixed back in prior to discharge, and costs would indeed go up. Water treatment and other costs for natural gas operators have risen faster than inflation since 2002. To the extent that methane operator costs have risen in the past three years, the adverse impacts of rule on the industry and Montana would be greater than stated in the economic impact statement.

COMMENT NO. 12: Several commentors stated that the report fails to include the required analysis of "all affected classes" including producers in Wyoming and the state of Wyoming itself.

RESPONSE: The level of adverse financial impact to industry and the state would be similar in Wyoming as in Montana, because Wyoming is also likely to treat or reinject a portion of their water in response to more restrictive border water quality requirements. Wyoming would probably continue to use discharge to ephemeral waterways and storage ponds as well.

COMMENT NO. 13: One commenter mentioned that the cost of a small crystallizer capable of handling the 10% brine system is more than the cost of RO or IX water treatment systems treating the entire system.

RESPONSE: Comment noted. The assumption in the economic impact statement based on available studies and based on advanced treatment underway in Montana is that brine concentrate would be trucked away to an appropriate well disposal site.

COMMENT NO. 14: One commentor asked that there be taken into consideration the benefits of the rule on the Tongue River Water Users (TRWU) and on irrigated private property and the additional costs on irrigators if the rules are not adopted. The commentor also asked to look at the costs of groundwater de-watering from not adopting the petition.

RESPONSE: While the "Benefits of the Petition" section discussed benefits of the rule to water users in the area, more explanation may be appropriate. The TRWU has a contract with the state DNRC to obtain water from the Tongue River and has contracts with its individual members for selling and delivering irrigation water to its members. If that water is too degraded as a result of methane development, TRWU members may not buy the water. Thus, the petition may have the benefit of better guaranteeing that the water users buy from the TRWU and that the contracts are honored. However, the numeric water quality standards adopted by the Board will ensure protection of beneficial uses in the area. Designation of EC and SAR as harmful parameters would establish a

more stringent regulatory threshold below the water quality standard, establishing an additional margin of safety. This action would also result in the greater application of treatment technologies, and is thus an alternative means of protecting water quality. In the same "benefits" section, the economic impact statement discusses briefly some of the benefits associated with preserving groundwater. In addition to what was mentioned in the economic impact statement, the costs of not adapting the proposed reinjection rule would including piping water to compensate for dry wells, additional monitoring and maintenance on existing or new water wells that could go dry, and perhaps most importantly the loss of water.

COMMENT NO. 15: One commentor indicated that his crop yield has been reduced by 22-30% from irrigation using production water discharged to surface water since methane production began.

RESPONSE: The analysis did not attempt an across-the-board analysis on crop yields. Other commentors have indicated successful use of water through managed irrigation without the loss of crop yield.

COMMENT NO. 16: One commentor took offense to the following passage on page 14, paragraph 3: "Compared to those who would bear costs, the beneficiaries of this petition would be a far more narrow and geographically concentrated group and most likely a lower income group than the national state average". The commentor indicated that the analysis was writing off those who would benefit from the petition as an expendable group because they are poor, marginalized, and a small group population-wise.

RESPONSE: The intent was to identify a potentially vulnerable group of people who might be less able to bear additional costs that could occur from methane development, or who might greatly benefit from the petition which could provide greater protection. In terms of being a narrow and geographically concentrated group, the intent was to point out that costs would be borne disproportionately by those in and near the development area and that the benefits of gas usage would be felt by consumers throughout the U.S. The intent is to demonstrate a disproportionate adverse affect on those living in the development area to the extent that not adopting the petition would result in costs.