

EXHIBIT NO	DOCUMENT	WEB ADDRESS	Document
1	Appendix H containing the proposed changes.		Petition
2	DRAFT <i>Water Production from Coalbed Methane Development in Wyoming: A Summary of Quantity, Quality and Management Options</i> , University of Wyoming Ruckelshaus Institute of Environment and Natural Resources, August, 2005, pp. 10, 16.		Petition
3	1/5/01 letter from Mike Reed at EPA to Leah Kraft at DEQ.		Petition
4	Sample NPDES permit with 435 language highlighted.		Petition
(Not attached)	Environmental Protection Agency, Guidance for Developing Technology-Based Limits for Coalbed Methane Operations: Economic Analysis of the Powder River Basin. February 2003.	https://www.northernplains.org/documents/CBMEPA_Report0203.pdf	Petition
5	<i>Wyoming Pollutant Discharge Elimination System (WYPDES) Program Basis for Technology-Based Effluent Limits in Coal Bed Methane (Natural Gas) WYPDES Permits</i> , attached to 4/25/2005 letter from John Corra to Mr. Stephen Tuber, EPA.		Petition
6	Munn, Larry. "Interactions between Coal Bed Methane Product Water and Soils, Vegetation, Agriculture and Riparian Systems in the Powder River Basin. February 8, 2002.		Petition
7	CBMC Coalition Report on Burger Draw, June, 2001.		Petition
8	Ganjugunte, Girisha. "Soil Chemical Changes Resulting from Irrigation with Water Co-Produced with Coalbed Natural Gas." <i>Journal of Environmental Quality</i> . (2005) Galley Proof.		Petition

9	Horpestad, Abe, <i>Water Quality Technical Report, Water Quality Impacts from Coal Bed Methane Development in the Powder River Basin, Wyoming and Montana</i> , Dec. 10, 2001.	http://deg.mt.gov/CoalBedMethane/pdf/H2Omerged3.pdf	Petition
10	Wyoming Department of Environmental Quality. "2004 and 2005 CBM NOV's Issued by DEQ & WQD.		Petition
11	Munn, Larry, Comments on Wyoming Powder River Basin EIS, February 17, 2003.	http://www.powderriverbasin.org/cbm/experts_commentsfeis.shtml#kuipers	Petition
(Not attached)	Final Statewide Oil and Gas Environmental Impact Statement and Proposed Amendment of the Powder River and Billings Resource Management Plans, January, 2003, 4 -136.	http://www.mt.blm.gov/mcfo/cbm/eis/	Petition
12	King, Lyle. "Land Application of Coalbed Methane Waters: Water Management Strategies and Impacts."		Petition
13	Bauder, Jim. Quality and Characteristics of Saline and Sodic Water Affect Irrigation Suitability.		Petition
14	Wilkerson, G.V., "Risk assessment methodology using a regional channel erosion potential model,"		Petition
15	Wichers, Bill, Wyoming Game & Fish Deputy Director, Sept. 10, 2004 letter to Leah Kraft.		Petition
16	Gore, James A. , May 14, 2002 letter to Paul Beels of BLM.		Petition
17	Corra, John, July 7, 2005 letter to Joe Russell, Montana Board of Environmental Review.		Petition
18	<i>Coalbed Methane Water Gets New Look</i> , Cheyenne Tribune-Eagle, August 8, 2005.		Petition
19	University of Utah Analysis of Water Quality for Livestock, July, 1997.		Petition

20	Wyoming Department of Agriculture Analytical Services Explanation of Standard Potable "Water Supply Series" of Analyses.	http://wyagric.state.wy.us/aslab.aslab.htm	Petition
21	Nixon, Lance. "Total Dissolved Solids, Sulfates Pose Risk in Livestock Drinking Water." South Dakota State University, July 2002.	http://agbionews.sdstate.edu/articles/TDS.html	Petition
22	Lewis, Robert. CRC Dictionary of Agricultural Sciences.		Petition
23	Interpretations of Livestock Water Quality.		Petition
24	May 11, 2006 draft of Appendix I		1st Status Report
25	Lovett, Brian. Email on CBM EC exceedence in SA Creed		1st Status Report
26	Environmental Protection Agency, 40 CFR Part 435: Effluent Guidelines and Standards, Oil and Gas Extraction Point Source Category. April 1979.		1st Status Report
27	Thomas, Jason (WQD), December 14, 2005 letter to Dennis Kirven regarding Response to Comments Related to Proposed Wyoming Pollutant Discharge Elimination System (WYPDES) Permit WY0052850		1st Status Report
28	Corra, John, letter to Kate Fox received after February 17, 2006		Response
29	Thomas, Jason (WQD), November 3, 2005 letter to Jill Morrison and Steve Jones regarding Response to Comments Related to Proposed Wyoming Pollutant Discharge Elimination System (WYPDES) July 2005 Public Notice		Response
30	DEQ Summary of Amendments to the Agricultural Use Policy		Response
31	Appendix H containing the proposed changes.		01/16/07 Hearing Brief

32	Appendix I additional requirements applicable to produced water discharges from Coal Bed Natural Gas		01/16/07 Hearing Brief
33	Chart of hydrology - Lidstone Creek		01/16/07 Hearing Brief
34	Memorandum from Jim Eisenhauer to Brian Bohlman, dated March 8, 2006, re: Water Discharges in SA Creek; J.M. Huber Corporation WYPDES Permits (WY00403055, WY0041025, and WY0049981)		01/16/07 Hearing Brief
35	Chemistry of Coalbed Methane Discharge Water Interacting with Semi-Arid Ephemeral Stream Channels by Marji J. Patz, Katta J. Reddy. And Quentin D. Skinner		01/16/07 Hearing Brief
36	Letter from Larry C. Munn and Ginger Paige to John Cora, dated December 5, 2005, re: concerns about the way coal bed natural gas product water salinity and sodicity issues are addressed by Wyoming DEQ.		01/16/07 Hearing Brief
37	Memo from Jim Eisenhauer to Brain Bohlman, dated December 1, 2004, re: Tooter Rodger's Complaint - CBM Produced Water Entering His Property Via SA Creek.		01/16/07 Hearing Brief
38	Memorandum from Jason Thomas to Jill Morrison and Steve Jones, dated November 30, 2006, re: Response to comments related to proposed Wyoming pollutant discharge elimination system (WYPDES) permits WY0046485 and WY0046701.		01/16/07 Hearing Brief
39	SA Creek Permits		01/16/07 Hearing Brief
40	Statement of Basis, New. Permit No. WY0040355.		01/16/07 Hearing Brief

41	Chart – Water Quality Sample for Wyoming – SA Creek		01/16/07 Hearing Brief
42	Statement of Basis, Administrative Modification, Permit No. WY0040355.		01/16/07 Hearing Brief
43	Statement of Basis, Renewal, Permit No. WY0040355.		01/16/07 Hearing Brief
44	Exceedence Notification for WY0040355. May 15, 2006.		01/16/07 Hearing Brief
45	Exceedence Notification for WY0040355. November 28, 2006.		01/16/07 Hearing Brief
46	Potential Effects of Coal Bed Natural Gas Product Water on Native Fish Species of the Powder River Ecosystem, by Wyoming Game & Fish, December 2006.		01/16/07 Hearing Brief
47	The Effects of Coalbed Natural Gas Activities on Fish Assemblages: A Review of the Literature, by Windy N. Davis, Robert G. Bramblett and Alexander V. Zale. February 2006.		01/16/07 Hearing Brief
48	Wyoming Water Development Commission Water Values.		01/16/07 Hearing Brief
49	Sage-Grouse Winter Habitat Selection and Energy Development in the Powder River Basin: Completion Report, by David N. Naugle, Kevin E. Dougherty and Brett L. Walker. June 24, 2006.		01/16/07 Hearing Brief
50	Wyoming Game & Fish Priority Watersheds.		01/16/07 Hearing Brief
51	Chart – Total Injected CBNG Water Wyoming PRB (by year).		01/16/07 Hearing Brief

52	Chart – Atlantic Rim CBM		01/16/07 Hearing Brief
53	Anadarko website on Coalbed Methane.		01/16/07 Hearing Brief
54	Information Presented to the Wyoming Coalbed Methane Water Management Task Force, July 6, 2006, BeneTerra – Harvesting Coalbed Produced Water for Agriculture with Subsurface Drip Irrigation (PowerPoint)	http://cbm.moose.wy.gov/Information Presented to the Task Force.htm	01/16/07 Hearing Brief
55	Information Presented to the Wyoming Coalbed Methane Water Management Task Force, July 6, 2006, EMIT Water Discharge Technology – Counter Current Ion Exchange Applied to Powder River Basin CBM Water Treatment (PowerPoint)	http://cbm.moose.wy.gov/Information Presented to the Task Force.htm	01/16/07 Hearing Brief
56	Powder River Basin Desalination Project Feasibility by Ronald C. Surdam, Keith E. Clarey, Ramsey D. Bentley, James E. Stafford and Zunsheng Jiao.		01/16/07 Hearing Brief
57	Technical Memorandum from Bob Kimball, Randy Huffsmith, Mike Smith and Tom Charles to Eric Hiser, dated June 29, 2006, re: Wyoming State Geological Survey, Open File Report \06-02, Powder River Basin Desalination Project Feasibility.		01/16/07 Hearing Brief
58	Review of Economic Issues Associated with CBM Development, by Roger Coupal. May 2005.		01/16/07 Hearing Brief
59	Information regarding J. Daniel Arthur, P.E.		01/29/07 Summary

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JAN 29 2007

BEFORE THE ENVIRONMENTAL QUALITY COUNCIL

John A. Lorenzon, Director
Environmental Quality Council

PETITION TO AMEND WYOMING)
WATER QUALITY RULE, CHAPTER 2,) 05-3102
APPENDIX H)

**PETITIONER'S SUMMARY IN SUPPORT OF RULEMAKING and
DESIGNATION OF RECORD IN MAYCOCK HEARING**

Petitioners, on this 29th day of January, 2007, respectfully submit the following summary in support of the proposed revisions to the Wyoming Water Quality Rules and Regulations Chapter 2, Appendix H and Appendix I, and designation of the record in *In the Matter of the Appeal of William P. Maycock from the WYPDES Permit No. WY0053171*.

I. Introduction

In rulemaking, the Council must consider all relevant factors, and it is "required to provide a brief and concise statement of the principal reasons for adoption of a rule." On appeal, the court's standard is described as follows:

Once the principal reasons for adoption are supplied, the courts are required to make a careful and searching inquiry into the facts. The ultimate standard of review is, however, a narrow one. The courts are not empowered to substitute their judgment for that of the agency. Nor in Wyoming, are the courts empowered to review an agency's rule-making decision to determine if it is supported by substantial evidence. This type of review is limited to contested-case situations.

Tri-State Generation & Transmission Ass'n v. Env't'l Quality Council, 590 P.2d 1324, 1330-31 (Wyo. 1979). The five criteria identified in WYO. STAT. § 35-11-

302(a)(vi)(A) – (E) provide guidance to the EQC, and the primary record support for each criterion is highlighted below.¹

II. The Need for the Rule Change

A. The character and degree of injury to or interference with the health and well being of the people, animals, wildlife, aquatic life and plant life affected.

1. Injury to soils and crops from CBM water surface discharge:
 - a) *Caused by elevated EC and SAR.* Petitioner's Exhibits 2, 6, 7, 8, 9, 11, 12, 13, 35, 36. Testimony of Dr. Larry Munn, Dr. Ginger Paige.
 - b) *Caused by water regardless of effluent concentrations.* Testimony of Ken Clabaugh (and photos), Marge West (and photos), Larry Munn, Ex. 7. Testimony of Chris Lidstone, Ex. 33. Testimony of Dr. Larry Munn, Dr. Ginger Paige (alteration of vegetation in ephemeral drainages from high quality, valuable forage species to lower quality salt-tolerant species, salt loading of the system with the potential that the salts will be released in amounts and at rates not suitable for the hydrologic system, large scale alteration of the groundwater environment, large scale alteration of soils)
2. Injury to aquatic life:
 - a) Ex. 15, 46, 47.
3. Injury resulting from failure of WYPDES permitting system
 - a) *failure to obtain and apply credible data:*
 - (i) Ex. 25, 34, 36, 37-45.

¹ The list is not all-inclusive, and specifically excludes letters in the record. No reference to effluent limits is included in light of the Council's decision to take no action on effluent limits at this time.

- (ii) *In the Matter of the Appeal of William P. Maycock from the WYPDES Permit No. WY0053171*, Volume I of IV, Transcript of Hearing Proceedings, Testimony of Jason Thomas, 78:3-83:15 (permit applications overlooked existence of downstream irrigation; *see also* Ex. 38 p. 2 SA Creek permitting information, giving permittee until 2007 to comply with newly discovered downstream irrigation); 124:7-24 (determination whether to regulate to protect smooth brome grass depends upon quantity of brome grass; “depends on what the data showed.”); 135:5-137:6 (DEQ issues permits on the basis of incomplete data); 156:19-157:7 (DEQ used wrong concentration factor for EC); 175:13 – 176:8 (EC and SAR limits established by DEQ do not protect soils against reduction in infiltrative capacity.); *Maycock*, Volume III, Testimony of Joe Olson, 558:6 – 559:12 (soil and vegetation data collected on downstream properties but not provided to DEQ “because I knew that if we submitted that information, it would probably delay issuance of that permit.”).
- (iii) Permits without meaningful/enforceable terms. *Maycock*, Volume III, Testimony of Joe Olson, 546:24 – 547:18. (if Williams’ water management plan did not work, the injured landowner’s only recourse is to ask that permit be reopened and show that there had been a measurable decrease in the agricultural use of his lands).

b) *failure to regulate “pollution”*

- (i) *See* statutory authority discussion at pp. 22-26, Petitioners’ Rulemaking Hearing Brief (Jan. 16, 2007); *Maycock* Volume I, Thomas testimony,

104:8-16 (narrowly and incorrectly defining “effluent limit” as merely a limit on the “chemistry” of the discharge. In fact Ch. 1 § 2(b)(xi) defines “effluent limit” as “any restriction . . . on quantities, rates and concentrations of chemical, physical, biological and other constituents which are discharged from point sources. . .”).

c) *failure to regulate water quantity that has the potential to cause unacceptable water quality*

(i) See statutory authority discussion at pp. 22-26, Petitioners’ Rulemaking Hearing Brief (Jan. 16, 2007).

(ii) Ex. 25, 34, 36, 37-45.

(iii) *Maycock*, Volume I of IV, Testimony of Jason Thomas, 112:18-113:3 (explaining that limits are set at end of pipe because they can be met there and incorrectly assuming downstream dilution instead of downstream concentration); 174:18-176:8 (goal of protecting against reduction in infiltration not achieved by end-of-pipe permit limits); 228:22 – 229:13 (water quality of import is that water quality at the location of application).

B. The social and economic value of the source of pollution.

1. Value of water

a) Testimony of Mike Besson, Ex. 48; Roger Coupal (water valuable commodity; CBM costs externalized to off-site landowners).

b) There was no evidentiary support for the fears expressed that CBM water that is valued by some would no longer be available under this rule.

2. Other values

- a) Testimony of Ginger Paige (suggesting potentially high long-term economic cost of damage to land and water has not been considered)
- b) Testimony of Jason Shoegren (other values, such as preserving environment, have economic value)
- c) Environmental Quality Act (legislative recognition of those values)

3. Value of CBM

- a) While gas production in Wyoming has great economic value, there is *no evidence* in the record that this rule would significantly reduce gas production or gas revenues, much less stop it. (Note that Dan Arthur, who represented that he was “a DOE researcher,” is actually a paid industry consultant and a petroleum engineer, who has presented no qualifications as an economist.)

C. **The priority of location of the area involved.**

- 1. Wyoming Game & Fish priority watershed. Exs. 46, 50; sage grouse habitat, Ex. 49.

D. **The technical practicability and economic reasonableness of reducing or eliminating the source of pollution.**

- 1. Alternatives to surface discharge currently being used
Exs. 51-55
- 2. Studies finding alternatives are feasible
Exs. 2 (pp. 23-25), 56, testimony of Keith Clarey, Roger Coupal.
- 3. Some industry estimates of costs of alternatives are exaggerated.

Compare Ex. 53 (Anadarko says its pipeline “will significantly reduce water handling expenses”); Ex. 56 , p.11 (estimating costs of a pipeline from Gillette to to Keyhole Reservoir at \$39 million); Ex. 57, p.6 (stating the cost of Anadarko’s cost-saving 48-mile pipeline and reinjection project to be \$50 million) *with Maycock*, Volume III, Testimony of Joe Olson, 501:17 – 502:2 (estimating the cost to pipe CBM water a few miles around the Maycock ranch to be \$13 million and cost of treatment to be \$116 million).

E. The effect upon the environment.

The effect of the current rule and its application upon the environment are addressed in section A. The proposed rule would address the injury identified, while recognizing the importance of the other affected values. The proposed Appendix I would:

1. Require credible data to support permit issuance

Currently a major cause of damage to soil and water from CBM water surface discharge is that the data submitted in support of permit applications is incomplete and inadequate (*see* A. 3. a) above, the SA Creek example outlined in Petitioners’ Brief, the *Maycock* record.) The injury from CBM water is not adequately or scientifically projected by permit applicants; and it is not competently assessed by the DEQ. This shoddy permitting repeatedly results in injuries to soil and water and human livelihoods that are unanticipated and which too frequently cannot be addressed by DEQ regulation because no enforceable permit terms exist. The Appendix I (a) requirement of “credible data” makes it clear that DEQ must only issue permits based on real science and full consideration of the impacts of the proposed discharges. “Credible data” is a defined

term which means “scientifically valid chemical, physical and biological monitoring data collected under an accepted sampling and analysis plan, including quality control, quality assurance procedures and available historical data.” WYO. STAT. § 35-11-103(c)(xix). DEQ and industry protest this would be an impossibly burdensome standard. Petitioners contend all this requirement asks is for permitting to be done right. That is not too much to ask.

Appendix I (a)(i) is the existing language of Appendix H without any change (and also the language of 40 CFR part 435). The unchanged language would allow DEQ’s current interpretation to continue (that is, any amount of wildlife or livestock watering would be sufficient to satisfy this section). The credible data requirement would not change the current interpretation of this language as to the amount of water; it would only require credible data that some amount of water from the discharge was being used by wildlife or livestock.

Appendix I(a)(ii) incorporates the language of the AG opinion and directs DEQ that it must consider downstream impacts to water quality that occur as a result of the quantity of produced water. DEQ’s contention that it already does that cannot stand up to the facts as demonstrated in the *Maycock* contested case and the SA Creek example (*see* A. 3. c) above). The credible data requirement as applied to this provision would mean that permit applicants would have to submit scientifically valid data, including modeling, that would project the impacts of discharge water all the way down the stream, and not just look at the end of pipe. This would allow and require DEQ to make informed permitting decisions based on the water quantity’s potential to cause unacceptable water quality beyond the end-of-pipe.

Appendix I(a)(iii) has two parts: First, it defines when discharged water should be regulated by the DEQ – when it is “pollution.” “Pollution,” in the context of CBM water, includes discharges that alter the physical, chemical or biological properties of water, including industrial waste (See Petitioners’ Rulemaking Hearing Brief pp. 23-25). The Environmental Quality Act authorizes DEQ to regulate pollution. “Pollution” is a function of chemical concentrations as well as turbidity, temperature, alterations to the hydrograph, timing and flows. So long as DEQ continues in its rigid and insupportable determination to regulate only chemical concentrations, DEQ fails to regulate pollution. The first paragraph of Appendix I(a)(iii) directs DEQ to regulate CBM water that causes pollution in all its forms.

Second, Appendix I(a)(iii) limits the scope of CBM water that should be regulated by DEQ to water “which:” creates a nuisance or causes injury. The rule’s opponents have ignored the qualifications following the word “which” that are set forth in (a), (b), (c) and (d). Not all pollution would be regulated or prohibited under this language; only pollution that causes injury. There is simply no basis for Mr. Wagner’s contention that the language would require all discharges to cease (1/5/07 Wagner letter to Gordon).² What the rule would require is that discharges that cause damage such as the damage to Marge West’s alfalfa meadows would have to be handled by one of the several alternatives to surface discharge (or better water management). For those people who say they like the water, it is not a nuisance and does not cause injury. Its discharge would continue to be permitted under this rule language (and the permit applicant may have to pipe around the West Ranch). This is not an “all-or-nothing” solution. Unfortunately it

² The DEQ’s doomsday scenario is not explained. It is particularly puzzling in that it totally ignores the huge regulatory latitude that DEQ currently employs in interpreting and applying rules.

has been characterized that way in an effort to kill the solution and maintain the status quo. The status quo, however, results in real injury to people and environmental interests that the EQA directs DEQ to protect.

The rule's opponents have only tried to cloud the issue with myths and misinformation. The rule **will not**:

- Prohibit CBM waste water discharges.
- Prohibit use of CBM waste water by the people and landowners who want it.
- Prohibit the discharge of produced water from traditional oil and gas production facilities.
- Fail because it improperly regulates CBM and not traditional oil and gas.

The Attorney General has opined that the EQC can promulgate a separate rule for CBM. The distinction must be supported, which it clearly is. *See* Petitioners' Rulemaking Hearing Brief, p. 2 n. 2. Further, (1) oil production is long-term as opposed to CBM and therefore there is a historical reliance on the oil-field water, (2) the SEO requires a permit for CBM water and not oil-produced water, (3) the existing Appendix H (d) language is targeted specifically to CBM, and (4) EPA is drafting guidance specific to CBM.


- Infringe upon the State Engineer's water rights regulation (the SEO Pat Tyrrell was very clear in his testimony that Appendix I would not infringe on his regulatory authority because this is a "discharge" issue).

The proposed Appendix I does offer a solution to a serious, long-term environmental problem. Its three parts work together: First, DEQ must stop issuing permits on a lick and promise. It needs real data and it must critically analyze what is submitted to it.

Second, the DEQ must regulate "pollution," and not just a single and arbitrarily restrictive aspect of pollution. Third, DEQ must issue permits that reasonably evaluate the various interests impacted by the discharge, and limit the injuries to those interests with enforceable permit terms. DEQ fails miserably to do any of those things under the current rule; and it fails to do its job as mandated by the EQC. The proposed rule language would direct DEQ to get back on the right track.

This is without a doubt an important issue with serious long-term implications. The EQC has the authority and the ability to fix this problem, and Petitioners have presented a practical and a legally defensible way for it to do that.

Dated this 29th day of January, 2007.


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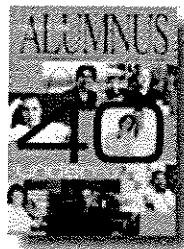
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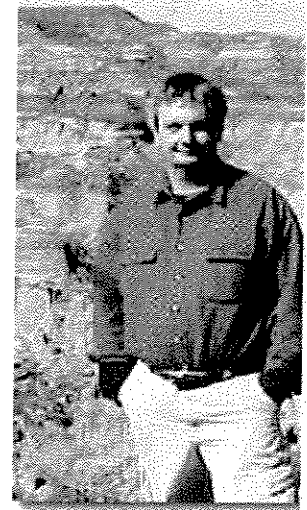
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Mr. Arthur earned a Bachelor of Science Degree in Engineering from the University of Missouri. He is a registered Professional Engineer. Mr. Arthur has managed a diversity of projects and projects have ranged in scope and complexity, including multi-discipline projects involving design and

Mr. Arthur's experience prior to beginning ALL-LLC includes more than 10 years of experience at an international consulting firm where he served as a Client Service Manager and was responsible for managing contracts exceeding \$20 millions. During this period, he gained significant experience as a project manager and technical advisor serving clients throughout the United States and abroad.

Prior to Mr. Arthur's consulting career, he served as an Enforcement Officer for the United States Environmental Protection Agency in Region V (Chicago, Illinois). He also has experience working with Oklahoma and Texas with a small independent oil producing company as well as with an oilfield services company.

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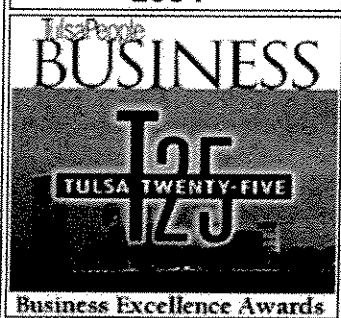
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