

PRBRC's Protest and Comments on Final EIS

February 18, 2003

FEDERAL EXPRESS MAIL

Kathleen Clarke
Director, Bureau of Land Management
Attention: Ms. Brenda Williams, Protest Coordinator
1620 L Street, N.W. Room 1075
Washington, D.C. 20036

RE: Protest of Final EIS and Proposed Amendment for the Powder River Basin Oil and Gas Project WY-070-02-065

Dear Director Clarke:

The Powder River Basin Resource Council, a citizen-based organization at 23 North Scott, Sheridan, WY 82801, (307) 672-5809, is filing this protest on the above referenced project. The Powder River Basin Resource Council (PRBRC) is an organization dedicated to the responsible stewardship of our resources, the preservation of our agricultural heritage, and the involvement of individuals in decisions that will affect their lives and communities. Our organization has over 1,000 members. The majority of our members live and work in the Powder River Basin and will be negatively impacted both directly and indirectly by the BLM's proposed action, which was heavily influenced by the coalbed methane industry.

In addressing this issue, the Powder River Basin Resource Council submitted extensive comments on May 15th regarding this proposed EIS and amendment for the Powder River Basin Oil and Gas Project. Those comments had several attachments submitted at the same time and incorporated by reference several comments from experts that were referenced in our written comments. Individual members from the PRBRC also submitted comments to the BLM regarding their concerns with this proposed action.

The Final Environmental Impact Statement and Proposed Plan Amendment for the Powder River Basin Oil and Gas Project (FEIS) fails to reveal the full extent of impacts to the people, land, water and air resources in the Powder River Basin. The analysis is flawed and fraught with errors, provides contradictory information and it especially fails to reveal or take the required "hard look" at the serious and long lasting impacts to the landowners living on top of these federal minerals. This is not an issue taken lightly by this organization. We have been directly involved in every BLM permitting action on coalbed methane development that has been authorized in the Powder River Basin since 1989. As part of that involvement, we have appealed several BLM permitting decisions before the Interior Board of Land Appeals regarding CBM development and we have prevailed. Now, we are facing an unprecedented level of development in this proposed project and we have found that BLM has ignored the requirements of the Federal Land Policy Management Act, the National Environmental Policy Act (NEPA),

the Clean Water Act and the Clean Air Act. We raised these specific issues in our comments to BLM in the Draft EIS and rather than reiterate those issues here we incorporate those comments by reference and refer you to that document. BLM has still not adequately addressed those issues in this latest document.

The stated aim of the National Environmental Policy Act is to: 1) foster better decision making based on thorough and comprehensive understanding of the environmental consequences of the proposed action; and 2) ensure that those actions taken by federal agencies in their decision making protect, restore and enhance the environment. How is BLM's analysis of the proposed action in this document, and the BLM's new preferred alternative meeting the purpose of NEPA? How specifically will BLM's preferred alternative for the Proposed Action, protect, restore, and enhance the environment?

We would also like to again call BLM's attention to 40 CFR 1500.2 (e) and (f) specifically regarding the policy of NEPA:

(e) Use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment.

(f) Use of all practicable means, consistent with the requirement of the Act and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment.

The BLM proposed plan does not meet the above requirement of NEPA. In presenting the purpose of the FEIS and Proposed Plan Amendment the summary states that the BLM and Forest Service need to evaluate the "level" of development of oil and gas in the Project are over the next ten years. Yet, only one level of development, the level proposed by industry, is offered. The absence of alternative rates of development thwarts the stated purpose of the study. Thus, the FEIS fails to explore a full range of alternatives or ensure adequate mitigation measures to address these impacts. The BLM in this document does not ensure industry will be financially responsible for the damages created by the development and instead allows this liability to fall upon the landowners and taxpayers. Finally, the BLM fails to provide the full opportunity for the affected and involved public to review the enormous volume of new information provided in the FEIS.

The PRBRC and two other organizations have either employed directly or received the professional assistance from the following respected scientists to analyze and review this document. Their comments are attached as well as being incorporated into our own protest and referenced herein. The scientific experts and their enclosed opinions on the document that we refer to are: Dr. John Bredehoeft - Exhibit 1, Jim Kuipers, P.E. - Exhibit 2, Dr. Larry Munn - Exhibit 3, John Molenar - Exhibit 4, Bob Yuhnke - Exhibit 5 and Dr. John Kelly - Exhibit 6. PRBRC has also provided a compact disc of over 60 photographs of coalbed methane impacts.

Following are the summary points that further delineate the issues being protested by PRBRC.

1. BLM failed to take the required “Hard Look” at the impacts of the existing 12,000 CBM wells combined with drilling an additional 40,000 CBM wells, as required by NEPA. BLM particularly failed to look at the severe economic impact to landowners that will be directly affected by the drilling and development of CBM.
2. BLM failed to analyze or provide for financial assurances for reclamation – which again directly affects the private landowners sitting on top of the federal minerals, as well as local, state and federal taxpayers. BLM has failed to reveal the actual costs of reclamation, which have been estimated by PRBRC’s expert to be over \$1 billion. BLM has a poor track record in addressing the failure of previous oil and gas operators in the PRB to reclaim the surface and clean up abandoned wells.
3. BLM should have issued a Supplemental Draft EIS with an appropriate time period for additional comment before coming out with this Final EIS. The Final EIS is significantly altered from the Draft, with hundreds of pages of new information. BLM has changed their primary means of water handling, reversed major scientific assumptions on which the entire study is based, and provided volumes of technical and water appendices that significantly alter the impacts. The BLM’s failure to allow the public an opportunity to review and comment on the new information is a violation of NEPA’s public participation and scrutiny requirements. 42 U.S.C. 4332(2)(c); 40 C.F.R. 1500.1(b)
4. BLM failed to consider a full range of reasonable alternatives and instead chose to follow industry’s choice of only looking at essentially one alternative with very little variation. The FEIS completely fails to look at alternatives that could prescribe best available technology for air and water impacts and a phased level of development. NEPA requires that the agency study, develop and describe appropriate alternatives to recommended course of action.”
5. BLM failed to fully analyze and reveal the impacts to groundwater by failing to address the quantitative impacts of water infiltration, changing water chemistry, long-term aquifer depletion, and the impacts to springs and water wells dependent on groundwater sources. BLM states, “no consensus exists among experts on the interpretations and assumptions that should be used to represent groundwater flow conditions in the PRB. Flow paths, the extent of flow between hydrogeologic units, and the relationship between local and regional flow in the lower tertiary aquifers are not well understood.”
6. BLM failed to fully analyze and reveal the impacts to surface waters from the discharge of 1.4 trillion gallons of water over the life of the project. BLM’s preferred water handling method – constructing huge infiltration pits on people’s private property – is inadequately researched, will take large tracts of land out of production, and has not been demonstrated to accomplish the claimed results of preventing ground and surface water contamination. BLM fails to reveal the true number of impoundments. Furthermore, BLM proposed no reclamation plan for these impoundments, nor adequate bonding. Adding insult to injury is BLM ‘s

failure to fully reveal and analyze the impacts of millions of pounds of salts, minerals and metals that will be left behind in these infiltration pits.

7. BLM failed to fully disclose the impacts to landowners that will bear the brunt of the impacts from drilling, road building, pipeline and powerline construction and water discharges. BLM did not fully disclose, (as they have in past EIS's) specifically which landowners and well owners will lose their water wells. Nor have they provided adequate mitigation of water well owners. In addition, BLM did not disclose and evaluate the cumulative environmental impacts of already existing (past and present) methane development, as required by NEPA, nor any cumulative impacts analysis of such problems as aquifer drawdowns from coalbed dewatering, fragmentation of wildlife habitat and the effects on sensitive populations, or the potential for pushing threatened species onto the Endangered Species List.
8. BLM's impact assessment of soils, vegetation and wildlife resources is qualitative in nature and fails to plan comprehensively for the project in order to avoid or mitigate, impacts of the proposed development, particularly impacts to ground and surface water, and to the land – the impacts of large off-channel pits, the effects on soils and vegetation from road building and other infrastructure construction, and the increase of noxious weeds.
9. BLM fails to analyze or reveal the cumulative and long-term impacts of the proposed development by deferring to the permit to drill stage of development (APD).
10. BLM failed to adequately analyze or consider all of the air quality impacts associated with the proposed action, including the effects on livestock and wildlife, and public health hazards that have already been demonstrated to exist from ongoing CBM activity.
11. BLM has inaccurately portrayed the social and economic impacts of the project by unduly focusing on increased revenues. They have ignored real impacts to social values such as quality of life (noise, solitude, increased vehicular traffic and dust) and economic concerns such as the inevitable boom-bust cycle, infrastructure impacts (housing, roads, hospitals, police, drug and alcohol treatment and affordable housing) and declining property values.
12. BLM failed to look at other economically viable alternatives to reduce the above impacts, including directional drilling in order to minimize the footprint, and such technologies as water treatment, or reinjection for storage and retrieval of valuable groundwater resources for future use.
13. BLM has failed to adequately consider public safety concerns regarding the potential for methane migration into homes and existing water wells. Instead of conducting the proper analysis on this potentially hazardous situation, BLM proposes that the project proceed while admitting that, "limited information is available for use in characterizing methane mobility and anticipated movements in the PRB over time."
14. The EIS violates the conflict of interest and third party contracting provisions of NEPA through the direct involvement in the EIS of the very "Companies" that hold the federal

leases on the minerals to be developed. As revealed by documents PRBRC received through a FOIA request, the “Companies” selected the contractor that wrote the EIS. NEPA regulations state at 1506.5 (c), “that the contractor be chosen solely by the lead agency.” Additionally, the “Companies” have a separate contract with Greystone, the contractor, and according to the Memorandum of Agreement between the Companies and BLM, they have an open door with the BLM on developing the proposed action, including the preferred alternative and mitigation measures.

PRBRC PROTESTS THE FOLLOWING PARTS OF THE BLM’S PROPOSAL:

PURPOSE OF AND NEED FOR THE PROPOSED ACTION:

The document states that the Companies hold valid federal leases. However, this is not accurate. The validity of these leases has been called into question by the Interior Board of Land Appeals in decisions IBLA 2000-241 issued on April 26th, 2002 and re-affirmed in IBLA 2000-241R on October 15, 2002. In these orders the IBLA determined the leases to be invalid due to the failure of the BLM to do the required pre-leasing analysis. This decision calls into question the validity of every federal lease. The fact that BLM failed to do the required pre-leasing analysis was concurred by the Department of Interior in a recent legal brief filed on February 3rd, 2003 in the Wyoming 10th Circuit Court. Yet BLM fails to address, discuss, or even reveal the existence of this pending case in the FEIS and Plan Amendment, and fails to address the need for new leasing or additional lease stipulations due to BLM’s failings.

ALTERNATIVES CONSIDERED IN THE NEPA ANALYSIS:

BLM has failed in both the draft and now in the final EIS to analyze the required range of reasonable alternatives. The BLM only considered 3 alternatives – one being the required “no action” alternative. The BLM only considered the proposed action, which was introduced and developed by industry, and essentially one other alternative. The public does not have a full range of alternatives to review in this document. BLM’s excuses for dropping one or more other alternatives are not valid. And contrary to what BLM might say, both the BLM and the FS have the legal authority to regulate the level of development of federal minerals. Furthermore, “Maximum ultimate recovery” of the oil and gas can still be achieved using a phased development scenario. BLM may have an obligation to maximum ultimate economic recovery but the lease stipulations have contractual obligations that require BLM and the developer to conduct operations in a manner that minimizes impacts which can include modification to siting or design of facilities and timing of operations. Specifically, section 6 of the Federal mineral leases states:

Conduct of operations – Lessee shall conduct operations in a manner that minimizes adverse impacts to the land, air and water to cultural, biological visual, and other resources, and to other land users: Lessee shall take reasonable measures deemed necessary by lessor to accomplish the intent of this section. To the extent consistent with lease rights granted, such measures, may include, but are not limited to, modification to siting or design of facilities, timing of operations, and specification of interim and final

reclamation measures...”

The alternatives considered fail to comply with this federal lease stipulation in Section 6. No alternative is considered that reduces impacts to private landowners and other resources.

BLM FAILS TO TAKE A HARD LOOK AT THE IMPACTS FROM THE PROPOSED ACTION AND THE ALTERNATIVES:

The alternatives analyzed fail to take the required “hard look” at the impacts to the private surface which overlies the majority of these federal minerals. The BLM fails to account for the economic hardship placed on landowners (i.e. the disruption of ranching operations for the unforeseeable future, the enormous outlay of time and money to deal with the impacts, including consulting with one’s attorneys on a regular basis.) BLM now proposes a “preferred alternative” that includes the construction of large discharge pits on private property. Nowhere are the economic impacts to the private landowners of these large pits, nor their subsequent clean up thoroughly analyzed in this FEIS. Nowhere has BLM demonstrated that there will be adequate funds to clean up the mess created by these pits and other associated infrastructure. Nowhere does BLM address the property devaluation that will take place as a result of the development. Why hasn’t BLM provided an analysis of the reclamation costs? Why hasn’t BLM made sure funds are available to cover reclamation costs? (BLM knows from past experience, as do our members in the PRB, that past oil and gas operations authorized by BLM have not been cleaned up.) The bonds posted by these companies are inadequate to ensure clean up. Yet BLM has required no additional bonding to ensure reclamation. Where in this FEIS is the assurance that the proposed, full-scale development of CBM includes full-scale reclamation?

BLM acknowledges in the FEIS that the air quality impacts will be much more extensive than they previously disclosed. The FEIS also indicates there will be exceedances to the air quality standards. Yet, the BLM fails to translate what these exceedances mean in terms of public health impacts, and fails to consider alternatives that would lessen these impacts.

Finally, BLM’s repetitive excuse for failing to analyze the impacts of this unprecedented level of development within the current document is that they will be analyzed on a site-specific basis at the APD or POD level. NEPA requires BLM to identify and analyze all impacts at the EIS stage and take a “hard look” at the impacts. BLM cannot transfer or defer its own responsibility to take a hard look at the impacts to another time or agency.

IMPACT MITIGATION, MONITORING AND REPORTING:

While impact mitigation monitoring and reporting is a critical part of the development process, almost none of this information (in appendix D) was available for review in the Draft EIS. This is pertinent new information that requires further review and comment from the public. The failure to provide adequate comment time for this new information underscores the need for a Supplemental Draft EIS. We believe it also demonstrates BLM’s admitted failure to reveal or attempt to reveal the impacts of development on affected landowners and the public as a whole.

The proposed mitigation is also inadequate. The CEQ Regulations define mitigation to include: (1) avoiding the impact by not taking action; (2) minimizing the impact by limiting the action; (3) correcting the impact by repairing the affected environment; (4) reducing the impact over time by operation and maintenance; and (5) compensating for the impact by substitute resources or environments. BLM has proposed no mitigation measures that fulfill this definition.

AGENCY PREFERRED ALTERNATIVE:

The agency preferred alternative is inadequate to ensure compliance with federal laws, including NEPA, the Clean Water Act and the Clean Air Act. It is also inadequate to ensure compliance with the BLM's own lease stipulations, particularly Section 6.

GROUNDWATER:

Water wells - BLM fails to identify all the permitted well owners that will lose their water wells through CBM dewatering. (BLM has identified these well owners in previous EIS documents on CBM development, and should do the same for this one.) Further the BLM fails to discuss how effectively their water well agreement policy has functioned over the past several years. Problems have been identified with water well mitigation agreements, as well as failures by the industry to carry out their responsibilities when drawdowns occur beyond the initial area of influence. BLM has also failed to discuss how effectively industry has compiled baseline data on potentially affected water wells. Many landowners have lost water wells due to methane development, and replacement wells have had poorer water quality and have required more expensive treatment systems. BLM also fails to analyze the impacts to water wells that serve small towns such as Clearmont or ensure if their well is impacted that it will be replaced.

The FEIS predicts that a maximum drawdown in the Powder River Basin will be more than 700 feet and that between 2500 and 6500 wells will be impacted. Dr. John Bredehoeft in his analysis of the FEIS states, "BLM made no attempt to assess the number of Fort Union water wells impacted by the CBM production, or the poorer quality replacement water, or the cost of mitigation." Although the FEIS indicates the Wasatch formation will also decline from 40 to 70 feet, BLM made no attempt to do a water well inventory of wells in this formation. Regarding this issue Dr. Bredehoeft says, "Finally there is the problem of impacts that linger beyond the plugging and abandonment of the CBM wells. The Wyoming modeling in particular shows that the maximum impact in the Wasatch Formation occurs approximately a decade later than the maximum drawdown in the Fort Union coals. There is no attempt to address the long-term impacts even though long-term impacts are predicted and discussed in the Wyoming FEIS."

Well Owner Protection – Regarding the water well protection agreement, Dr. Bredehoeft states, "This agreement does not protect many well owners." He further notes:

- 1.) the agreement applies only to water wells in the Fort Union, and not in the Wasatch;
- 2.) the water well must be within the circle of influence of an active CBM well and;

3.) the agreement expires when the CBM well is plugged and abandoned.

This agreement clearly fails to protect well owners with wells in the Wasatch aquifer, fails to protect well owners with water wells further than 0.5 miles from an active CBM well, and, even though the drawdown is predicted to range 10 to 12 miles beyond CBM development, it fails to protect well owners after CBM wells are plugged and abandoned, when drawdown is expected to continue for 10 years or more. Additionally, the well owner is not protected when several companies surround them and each one blames the other. How does BLM propose to address that issue? One suggestion Dr. Bredehoeft makes, (and an idea that PRBRC has proposed numerous times over the years,) is that BLM establish a water well fund as a way to mitigate impacts when wells are lost or damaged by CBM production. Please refer to Dr. Bredehoeft's detailed comments attached to this protest.

Springs and Artesian wells – BLM's response that "No existing inventory of springs within the Project Area is available to add to the FEIS" are incorrect. The Wyoming State engineer has a listing of all permitted springs and artesian wells. Further, BLM is required to collect and analyze this information, and has had ample opportunity to survey landowners in the project area for an inventory of springs and artesian wells.

Infiltration and Recharge – BLM failed to address how the removal of clinker for surfacing material will affect recharge and infiltration.

Vertical Upward Movement of Groundwater – BLM failed to address how the infiltration and filling up of the shallow aquifer will affect deep-rooted plants such as sagebrush.

SURFACE WATER

For impacts related to both surface water quality, soils and land please refer to the attached comments submitted by James Kuipers, P.E. To summarize his concerns, Mr. Kuipers states:

“The Bureau of Land Management has attempted to identify and evaluate mitigation measures to address water resource protection and reclamation of disturbed lands, but the present effort falls far short of ensuring that impacts will not occur that cause violations of state and federal water quality regulations and result in significant taxpayer liability for environmental cleanup.”

The BLM has failed to analyze the impacts to downstream water rights holders from CBM development. The BLM attempts to push this analysis off to a later stage. The FEIS also fails to address the impacts that will occur from increasing salt loads into drainages, and the effect this water will have on soils when used for irrigation. Again the FEIS defers the issue to a later date. A Montana DEQ letter states, “Each CBM well produces an average of 20 tons of salt per year.” Despite this and other information available to the BLM, the document fails to analyze the extremely serious impact of salt loading in streams. The FEIS also fails to address the impacts pointed out in the Draft regarding impacts to downstream irrigators from in-channel reservoirs or

impoundments.

The BLM failed to address the impacts these impoundments can have on intermittent streams during storm runoff. The FEIS fails to address the comments raised regarding impacts to downstream water quality in Montana and South Dakota. The FEIS fails to ensure compliance of the proposed action with the Clean Water Act. BLM also failed to address the impacts of the concentration of potential toxic constituents in the CBM produced water. BLM focuses primarily on salinity and sodicity and gives scant attention to the concentration of heavy metals and other elements and the resulting toxicity that will result from the CBM discharge water. The FEIS incorrectly states, "CBM produced water is often suitable for irrigation." In the Powder River Basin the CBM produced water is rarely suitable for irrigation! Given the abundance of clay soils and the high SAR values of CBM water, very little of this water is suitable for irrigation without extensive treatment. Where is BLM's scientific backing for their statement?

CBM PRODUCED WATER USE AND TREATMENT:

BLM fails to analyze the impacts of evaporative concentration of CBM produced water in the impoundments. BLM again attempts to push this analysis off to a later stage. Dr. Bredehoeft calculates that each CBM well will produce approximately 100 tons of minerals during its life. Yet, BLM does not discuss any of the issues associated with the accumulation of minerals or metals or how they will be disposed of, and who will be responsible. Nowhere does BLM address the accumulation of dissolved solids including toxics.

For example, at a TDS of 3,000 mg/l and a not uncommon discharge of 20 gpm, the dissolved solids loading to an impoundment would be 0.22kg/min. (0.11lb/min) or approximately 148 lbs per day, or 4,453 lbs per month. Taking into account evaporation rates in Wyoming during summer, the water actually ingested by wildlife and livestock is quite likely to be much more concentrated with respect to most constituents than the end of pipe sampling would suggest. Due to evaporation and concentration the water may be outside the criteria for livestock suitability. Again, BLM makes no attempt to analyze or reveal this. This build up of toxic constituents in a closed system will likely generate sludges that may be considerable after years of operation. These sludges may also become elevated with certain constituents and may not pass the EPA hazardous waste protocols. BLM not only failed to consider this impact but the potential for these sludges to be properly disposed of or cleaned up.

It appears that Kuipers is correct in predicting that the financial liability for cleanup will rest with the landowner and taxpayer. BLM ignores this issue despite the fact that it was brought to their attention in previous comments by this organization and other scientists. How does BLM intend to ensure clean up of these minerals and metals? What financial assurances does BLM have to ensure reclamation? BLM says they will develop alternative sites for locating impoundments, and that site-specific mitigation measures and monitoring requirements will be developed at a later time. When will the public have an opportunity to comment on these matters?

Additionally, the FEIS calls for 4,300 impoundments an average size of 50 acres, that will have a capacity of 450-acre feet and that will service as many as 40 wells. We feel BLM's modeling

estimate that each well will produce only 5 gpm is overly optimistic and very speculative. We know of wells that produce over 50 gpm for the first year.

Dr. Larry Munn, a soil scientist has reviewed several problems with the calculations in the FEIS in the models related to the containment ponds and infiltration pits. We are incorporating Dr. Munn's comments by reference and attached to this protest. Here are some critical flaws pointed out by Dr. Munn:

1. Because water disposal in the BLM's preferred Alternative 2A relies heavily on infiltration, containment and surface disposal (EIS p. 2-46, Table 2-21), the use of an incorrect modeling parameter results in serious under estimation by BLM of the number of ponds that will be constructed and surface acreage that will be disturbed.
2. The flaw in these calculations is using the average rate of production of (4.8gpm) to determine the required capacity of the systems.
3. If for example, the rate of production for each well is 15 gpm (22 acre-feet per year), the 40 wells in the cluster to be serviced by an evaporation pond would produce not the 296 acre-feet as per the BLM calculation but rather 880 acre-feet. If the same assumption is made of a 50 acre water surface which can evaporate 4 feet of water annually, with 10% subtracted for seepage and an amount of water equivalent to the annual precipitation used for consumptive use, the pond would be required to contain 592 acre-of water which exceeds its 450 acre-foot storage capacity. Obviously, the ponds would have to be made larger, or there would have to be more of them constructed. Or both. This will result in a 2X to 3X increase in the area disturbed.
4. Similarly, the 7 wells collected for each infiltration pond would produce (at 15 gpm)54 acre-feet of water, not 51.8 acre-feet. If the water is assumed to infiltrate at a rate of 4 feet per year and to also evaporate at 4 feet per year, then a 6 acre pond would have 17.7 feet of water in it at the end of the first year. Again, the result will be a much greater number of ponds, or much larger ponds to infiltrate the water produced during the first several years- another 2X to 3X increase in the area ultimately disturbed and requiring reclamation.
5. For surface disposal, the calculation will be that at a rate of 4 feet per acre evapo-transpired, it would require 5.5 acres to dispose of the water from each well. This will greatly increase the overall surface area disturbed (2X to 3X). In all three disposal strategies, the fact that all the wells of a field or cluster are all brought into production at the same time will require that the maximum rate of water production during the first year will be the limiting (size determining) rate that must be accommodated.
6. The quality of the water (Table 3-2, p 3-12) is such that much of it will not be suitable for land application disposal or irrigation. Even the median value total dissolved solids from Table 3-2 represents a medium salinity hazard (an EC of 1.3 as per Table 4-16, p 4-147). An acre-foot of such water would contain 1.1 tons of salt. To add 4 feet of this water per acre

per year for 7 years (p 2-29) would add more than 30 tons of salt per acre.

7. In general, there is still over reliance on data from Gillette area well fields and extrapolation of that data across a broad expanse of varied topography, water quality and geologic and soil substrates. Errors resulting from this wide extrapolation will be compounded in sub-watersheds with the greatest density of development (e.g. Upper Powder River, Table 2-23). Certainly differences in topography and substrates may be expected to influence choice of water disposal strategies by the gas companies.

In the Draft EIS BLM claimed that 80% of the water would be lost to conveyance, whereas now in the FEIS they are claiming a conveyance loss of only 20%. Where is the reasoning or explanation for this dramatic change? Under this current assumption, a significant portion of water discharged onto the surface will reach the mainstems of waterways in the PRB. According to Kuipers' review, the discussion in the FEIS of surface water impacts from CBM produced water discharges, "narrowly focuses on electroconductivity and SAR and the impacts of such changes on irrigation practices."

Kuipers concludes:

"The failure of the FEIS to recognize and address pollutants other than SAR, TDS and electroconductivity, and impacts other than to irrigated agriculture, is a major oversight that renders the FEIS attempts to characterize the human and environmental impacts of CBM produced water incomplete. The FEIS should be supplemented to evaluate additional pollutants including barium, ammonia, fluoride, aluminum, lead, arsenic, total dissolved solids, manganese, iron, selenium, zinc, and organic compounds."

The BLM revised the FEIS to include an additional Surface Water Quality Analysis report. This report was not available for review in the draft, and this is the first opportunity the public has had to comment on it. Jim Kuipers points out in his comments that BLM makes the assumption that none of the water contained in unlined ponds, land applied or injected will reach surface waters. We know that this is not true based on existing CBM development in the PRB. We know that water contained in lined ponds has reached surface waters, and we also know that water "disposed of" through the LAD method has reached surface waters. Kuipers states, "The assumption that 0% of the water under these circumstances would reach surface waters flies against conventional wisdom and experience."

Regarding the impacts of the proposed infiltration pits, the FEIS and the Surface Water Quality Assessment assume that only 15% of the water from infiltration pits will reach surface waters. Again, the experts who have reviewed this document, including Dr. Bredehoeft and Jim Kuipers, conclude that there is no basis for this assumption. In fact, Kuipers states that *practical experience* shows there is no basis for this assumption.

Overall Kuipers concludes that the SWQA used for the FEIS is highly suspect:

"Given that the assumptions about percolation from containment ponds, infiltration

impoundments, LAD and re-injection into groundwater are potentially grossly inaccurate, the modeling that was done in the SWQA and relied upon by the FEIS to predict impacts on mainstem water quality and other water related impacts does not reliably or accurately depict the potential outcomes of CBM produced water management.”

GEOLOGY

Methane Migration

BLM fails to identify in the FEIS the details of a monitoring network for methane migration that has been established around Gillette. Further, BLM fails to fully explore or discuss the possibilities for methane migration through old oil and gas wells. BLM admits that they did not comprehensive evaluation of the integrity of old oil and gas wells. We have reports of methane in water wells above the coal, methane build up in toilets in homes, and methane problems with water wells, none of which the BLM has adequately addressed. Even more importantly, BLM has a safety issue on their hands that they are ignoring in terms of the liability to affected landowners. BLM did not look at the impacts to all the CBM water wells within the PRB. BLM must require mitigation for detecting and eliminating seepage hazards for residents in the Powder River Basin. If BLM declines to do this, as they have in the FEIS then they must reveal and analyze the hazards and economic impact to landowners in the PRB for costs of dealing with methane gas in their homes. BLM has made not attempt to try to quantify, disclose and mitigate these very real and very serious impacts.

Uranium bearing waters rising to surface with CBM waters

BLM states that CBM water discharge is not likely to include uranium-bearing waters unless poor well completion techniques were to result in complete isolation of the Wasatch and Fort Union aquifers. It is widely know in the PRB that there are many wells that have poor well completion techniques. What review and analysis did BLM conduct to follow-up on this issue? What about the areas of leakage between the Wasatch and Fort Union aquifers? BLM has failed to address the impacts of CBM water discharge mixing with uranium bearing waters and then being discharged onto the surface.

Coal Fires

BLM does not discuss in this FEIS the expanding number of coal fires north of Gillette, that were particularly active this past summer. Nor does the BLM fully analyze the expanding coal fire north of Sheridan, a situation which seems to coincide with CBM dewatering in the area. BLM is ignoring information that could provide a link between CBM dewatering and the expansion of underground coal fires. What is BLM’s explanation for the expansion in these areas of underground coal fires?

Subsidence

BLM fails to look at subsidence that may result from a Wasatch Formation drawdown caused by

dewatering of the lower Fort Union Formation.

SOILS

While numerous comments were made by this organization and others concerning the impacts to soils from CBM discharge due to the salinity and sodicity of the water, BLM failed to discuss impacts that have already occurred from CBM development, or propose methods to prevent soil and vegetation damage. Further, when CBM discharge water applied to soil does cause soil damage, (as the FEIS indicates will happen) what are the costs of mitigation? Where have those costs been factored into the FEIS, and what financial assurances will BLM provide to ensure soils will be reclaimed?

Additionally, once soils are damaged by salts or topsoil is not carefully salvaged or protected during the construction phase, as was the case in a recent court trial, it is next to impossible to reclaim the soil. It then becomes extremely expensive to haul in new topsoil to repair the damage. In the recent court case, that we mentioned above, the Brannaman ranch, received a verdict of over \$800,000 in damages to their ranch, over \$500,000 of those damages were specifically for the replacement cost of the topsoil. Nowhere in this FEIS does BLM address the specifics of how topsoil will be protected, replaced or reclaimed. Again, BLM deference to dealing with these issues in a mitigation plan at a later date does nothing to address the issue now during the comprehensive planning stage.

VEGETATION

Extensive impacts to vegetation have already occurred in the PRB from the current level of development, along with the spread of noxious weeds. However, the BLM has failed to reveal the cost of re-vegetation and reclamation. The BLM has also failed to ensure adequate funds will be available for re-vegetation or weed control. How much weed control and re-vegetation will be taxpayer funded, or fall to the private landowner? Can BLM ensure plant diversity in re-vegetation? BLM states that, “Noxious weeds represent the greatest single threat to ecosystem biodiversity. Ground-disturbance activities provide the “breeding-grounds for noxious weed infestations. Good-faith efforts by resource developers to combat the spread of noxious weeds are crucial to minimizing long-term damage to ecosystem health.” Yet BLM has neither divulged the current level of noxious weed control, nor provided effective mitigation measures.

Dr. Munn states:

“Weed control plans are accepted as if they will be effective, despite the fact that invasive weeds have proved difficult to control under conditions existing prior to disturbance. The large increase in roads and traffic will only make control much more difficult. Who will be responsible for weed control 20 years after the gas fields are shut down? Weed invasion will reinforce decreases in plant community diversity, which will result from surface disturbance and water application. If salt tolerant crops are required to effectively utilize salinized soils, this will also represent loss of plant diversity.”

WETLAND/RIPARIAN AREAS

The FEIS admits the loss of wetlands and riparian areas yet fails to disclose where, or to what extent and effect this will have on other species or ecologically. The CBM produced water has already had an impact on riparian areas yet BLM has failed to disclose those impacts. The other area BLM fails to address is the creation of new wetlands and what will occur after CBM discharge water is ended.

WILDLIFE –Big Game, Bird Life & Aquatic Species

Overall, the FEIS admits that some of the “irretrievable effects” resulting from this project will be decreased wildlife populations, loss of wildlife habitats—including loss of habitats for sensitive species—and harassment and displacement of particular “special-status” wildlife and plant species. However, the FEIS does not address the effects of those losses, economically or otherwise. Further, the FEIS does not explore other viable alternatives that would lessen or reduce these losses. Finally the huge amounts of water that are to be contained will have an effect on the whole ecology of the Powder River Basin. During the development of the area it is hoped that the effect will be monitored. However once the development plays out who will monitor these thousands of storage pits that are slowly concentrating highly toxic salts and metal that could potentially damage the food chain? Who will maintain the fences to keep out the wildlife and keep them from drinking this highly toxic water? It will be impossible to keep out the waterfowl that after years of use during the development when the water is receiving regular discharge will be returning to containment ponds that are slowly becoming pits of death for those species that had come to use them over the preceding years.

Big Game - While BLM responded to many comments, and substantially expanded information about big game populations and the impacts of CBM on these populations, including new mitigation measures, the FEIS still lacks adequate baseline data on affected wildlife. BLM has also failed to fully examine the economic loss to landowners, outfitters, local communities and the Wyoming Game and Fish licenses from the reduction and loss of big game animals in the hunt areas in the PRB. BLM has avoided discussing the effects current CBM development is having on big game animals. The FEIS predicts extensive impacts, but fails to provide much needed baseline data, specifics on habitat, better planning efforts, or different alternatives and/or mitigations that will avoid these far reaching impacts. Once again, the FEIS puts off until the APD stage any comprehensive data collection, full analysis, or mitigation. Finally, and extremely important, the FEIS presents erroneous information.

The proposed water handling facilities under Alternative 2A, the preferred alternative, are extremely misleading when it comes to the impact on wildlife. Considering the two big game species most prominent in the Powder River Basin, pronghorn and mule deer, the water containment ponds under 2A are not included in the tables showing acres effected. It states in the Big Game summary, 4-186, paragraph 4 that "Alternatives 2A and 1 differ only in the proportion of the various water handling methods and their associated disturbances". This is not reflected in the total short and long term effects to the ranges of the two animal species. The increase in water handling facilities from Alternative 1 to 2A is 34 % and would directly affect the number

of acres having an impact on the ranges of pronghorn and mule deer. Mule deer and pronghorn ranges directly effected would increase by over 9000 acres in both the short and long term. This is particularly disturbing for private landowners who would see the long-term permanently disturbed acreage under Alternative 2A increased by 19% concerning pronghorns and by 23% concerning mule deer.

Dr. Larry Munn's more accurate projections for containment ponds are 2 to 3 times that of the EIS and would mean a huge increase of permanently disturbed mule and pronghorn range acreage. The actual reduction of the development on Big Game Habitat Effectiveness, which is calculated at over 30 % for both pronghorn and mule deer Basin Wide, would increase substantially if water handling facilities are to considered in the estimate. However, as stated on page 4-183, paragraph 1, "*the estimate does not take into account any reduction in habitat effectiveness that might occur as a result of water handling facilities,...*". When Dr. Munn's projections are considered the reduction in habitat effectiveness for the two species would be very dramatic.

Birds – The FEIS provides some additional data on raptors, sage grouse, waterfowl and songbirds but falls short of baseline data and protective measures for sage grouse, waterfowl and migratory bird species. The effects in the Powder River Basin on the Greater Sage Grouse are again grossly under estimated. Under Alternative 1, as stated on page 4-270, paragraph 4, "...the synergistic effect of several impacts would likely result in a downward trend for the sage grouse population and may contribute to the array of cumulative effects that may lead to its federal listing." Again alternative 2A, the preferred alternative, states "...the magnitude and types of effects would be similar to those presented in Alternative 1, *with the exception of the effects associated with proposed facilities for water handling.*" Under 2A, 36,263 acres would be permanently disturbed. Considering Dr. Munn's projections that could increase to over 100,000 acres. Alternative 2A also does not consider the raise in the water table which will impact unknown acres of sagebrush, as it cannot tolerate saturated root zones. This destruction of habitat, and habitat fragmentation as discussed on pages 4-269 and 270, (which will multiply under Alternative 2A) will result in a dramatic decrease in sage grouse numbers leading to extirpation of the species in areas in which it now thrives.

Aquatic species– Again BLM responded to comments on the lack of information provided in the DEIS, and have now added information on Wyoming sensitive fish species, as well as additional information on the impacts to aquatic species from changes in water flow, temperature, sedimentation, turbidity and concentrations of salts and metals. Unfortunately, the FEIS—while noting that native species will be replaced by more tolerant exotic species—provides neither effective mitigation measures nor an alternative that minimizes the projected reduction in biodiversity. Further, the FEIS mistakenly states that the Wyoming NPDES program will protect “designated uses,” including aquatic health. This is not correct. The Wyoming NPDES water quality standards are not protective of aquatic life. Further, the NPDES program has proven itself to be incapable of addressing cumulative impacts of many discharges. Again, BLM defers mitigation or protective measures to a later permitting stage.

Threatened, Endangered or Sensitive Species

Although the FEIS directly states that, “unavoidable adverse effects to special status wildlife and plant species would occur under each of the alternatives”, the FEIS fails to discuss what the impact of this will be upon private landowners, ranching operations, and other activities taking place on the surface. BLM fails to explain how their analysis in the FEIS differs from information they provided in the DEIS, and again, they fail to fully explore additional alternatives aimed at minimizing the impacts.

CULTURAL RESOURCES

The FEIS is again disregarding its duties under NEPA to fully inventory cultural resources and ensure compliance with the National Historic Preservation Act. The BLM again puts off a full inventory of cultural resources to the individual permitting stage and puts off comprehensive baseline data, analysis and thorough mitigation measures.

LAND USE

Land Status/Ownership – On page 4 -288,289 – The FEIS does not reveal the true picture. BLM states: “For Alternative 1 and Alternative 2, most of the proposed wells and ancillary facilities would be located on lands where the federal government owns the CBM mineral estate. However, not all of the surface may be federally owned.” In fact, the majority of the surface is **not** federally owned. Elsewhere in the document the FEIS admits that the surface estate is 76% privately owned. This project will have extensive and severe impacts on private property owners that BLM has not fully investigated or documented in the FEIS.

Further, the FEIS fails to address or analyze in any depth the economic impacts to private property owners from road construction, the building of pipelines and power lines, and the construction of large discharge reservoirs, compressor stations, and the like. The BLM also fails to account for the loss of livestock forage due to all the drilling and infrastructure, and they fail to account for the loss of forage due to noxious weed infestations, and soil and vegetation damage due to CBM water discharges. Additionally, BLM fails to account for adequate bonding to ensure reclamation and fails to provide for meaningful mitigation or reclamation assurances for private property owners. In fact, as currently proposed, this development will be subsidized and carried out on the backs of private property owners in the Powder River Basin. This project represents a complete and serious abdication of BLM’s responsibilities under NEPA.

VISUAL RESOURCES

The FEIS clearly states that the landscape characterizing the Powder River Basin will undergo “substantial” visual changes. The Powder River Basin will be transformed from a rural landscape to one enormous industrial gas field. Furthermore, most of the development will take place on private lands. The FEIS completely fails to address or quantify the economic impacts to private property owners of plunging real estate values. Historically and in recent years, much of the Powder River Basin has been sought after for its scenic beauty, solitude and wildlife values.

All of these values will be severely impacted. In addition, evidence already exists demonstrating that properties in CBM developed areas take longer to sell (if they sell at all) than those in non-developed areas and sellers almost always suffer significant property value losses when they do sell. This phenomenon is confirmed by a recent study undertaken in the San Juan Basin regarding the real estate impacts of CBM development. Yet, despite the fact that the contractor writing this document was also the lead contractor in that study, none of that information has appeared in this FEIS. BLM has failed to take a hard look at these visual impacts, and rather than seeking ways to regulate the development in order to protect the Powder River Basin's visual integrity, they have opted to manage the project area for the development scenario they are proposing.

RECREATIONAL RESOURCES

While the FEIS says that a total of 47% of the active hunters in the Project Area could be affected by impacts to wildlife habitat by the CBM development, the FEIS again fails to analyze the economic impacts of the loss of those recreation dollars to state and local coffers. The FEIS also fails to mention the impacts to some ranches that provide other non-consumptive recreational opportunities.

NOISE

The FEIS takes an inane approach to the fact that a very quiet, peaceful environment is now going to be completely overtaken by the noise of drilling and compressor stations. The document assumes that because a noise level of 55dBA is a guideline for acceptable noise, people living within the area will not suffer health effects. We already know that this constant industrial noise can make people irritable and sometimes drive them to unpredictable behavior (i.e. the Gillette area resident that fired rifle shots at a noisy compressor station.) The FEIS must deal in the real ways the noise levels associated with CBM development affect people accustomed to solitude, not some academic drivel about how they will not be affected.

SOCIO-ECONOMICS

Most revealing under this section in the FEIS is the substantial profit margin industry will walk away with if the project proceeds as industry has proposed. The profit margin is shown to be 167% to 211%. Clearly, a profit margin such as this indicates a lot more could be done to mitigate the economic losses to landowners, well owners and the general environment. It also indicates BLM has failed in their duty to ensure mitigation measures that can prevent these types of impacts. Further, BLM's excuses that other alternatives such as water treatment or reinjection are not economically feasible are not substantiated with this evidence.

As with the Draft EIS, BLM has put an inordinate amount of time and effort into pandering to industry and all the economic benefits this project will provide for the State of Wyoming and for the counties where the development will take place, and virtually no time or effort into examining the social costs of a project of this magnitude. Why hasn't the BLM hired a trained sociologist or anthropologist with expertise in the field of social impact analysis to carry out the

type of in-depth analysis that is required by NEPA? Statements such as the following (an approximation of which appeared in the draft EIS) under the “Quality of Life” heading illustrate just how inept and deficient BLM’s effort in this area has been: “It is clear that no one would be in favor of a ‘poor’ quality of life, but it is difficult to assess what specific aspects of a long-term project may cause the perception of quality of life to change in a negative manner.” The following statement, referring to the adverse impacts associated with CBM development, such as dust, noise, traffic, damages to the natural landscape, and the daily stresses of dealing with CBM development on or near one’s property further reinforces the obvious fact that whoever put this section of the document together didn’t know what they were doing: “The psychological stresses that result from these impacts, both positive and negative, are beyond the scope of this analysis, given the variability in the ways individuals react and cope with stress.” This is an outright dismissal of BLM’s responsibility to “Use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment.” (Sec. 1500.2 under “Policy”) The human environment includes the natural and physical environment, according to the regulations, as well as the relationship of people with that environment.

Clearly, BLM has made no attempt to describe the “social forces” operating within the project area before CBM development was as widespread as it is now, nor have they looked in any depth at the current situation, other than to handle the whole thing as though it were a popularity contest—those for and those against the development. The population as a whole will be impacted whether particular individuals are “for” or “against” CBM, not only because of the disproportionality of direct benefits or losses caused by the split estate issue, but because the “pro” and “con” dynamic is having a devastating effect on community and even family relationships; this situation can be expected to become worse with another 40,000 CBM wells.

Rather than repeat our previous comments for purposes of the Final EIS, we would like to refer you to our comments on the Draft EIS, as they have not changed. In those comments, we made substantial mention of the Pedersen Report, which predicted housing shortages and skyrocketing housing costs, and considerable pressures on community infrastructure and social service networks from implementation of this project.

This time we are attaching a review of the Social Impact section of the FEIS by Dr. John R. Kelly, Professor Emeritus of the University of Illinois at Urbana-Champaign, who says in his Introduction, “Few would argue that what happens to people is unimportant. Further, all recognize that some people are most vulnerable, susceptible to serious damage when the physical and economic environments are changed. This is especially true in country such as the Powder River Basin where the social fabric is as fragile as the ecology.”

Dr. Kelly criticizes the FEIS for, as he says, ignoring the impacts of the project on the “ranch-based’ society (that makes up the project area) and focusing instead on the “energy-transformed towns, which BLM assumes will undergo minor population increases. He, also, points out the need for a social impact analysis with the minimum of: estimates of population growth for communities within the project area; estimates of tax revenues from the development that would accrue to each community; analysis of current employment patterns; analysis of current housing

supply; use of available boom town studies to get an idea of long-term, post-boom impacts; and realistic estimates of disruption to the social order, and other problems brought to the communities of the project area by transients with little long-term investment in the community.

AIR QUALITY

We incorporate the protests and concur with the comments herein of John Molenaar of Air Resource Specialists and Bob Yuhnke, who have both reviewed in detail the air quality analysis reports conducted and revised for this FEIS. They are attached to this document.

We want to also bring to the BLM's attention again, the fact that the air quality impacts of coalbed methane development have already had significant impacts on air quality in the Powder River Basin and on individual's health. We have citizen's who now have respiratory problems not experienced in the past or who have asthma that has worsened as a result of the air pollution caused by CBM development.

We highlight some of the analysis provide by John Molenaar:

1. In contradiction to the DEIS, the air quality analyses presented in FEIS and supporting documents indicate a high probability of significant exceedences of PSD Class I and Class II increments and severe visibility degradation in surrounding Class I areas. However, the FEIS still underestimates these impacts due to:
 - Underestimation of the emissions directly associated with the PRBO&G project;
 - Underestimation of the cumulative reasonably foreseeable increase in emissions by deliberately leaving out specific planned or permitted sources;
 - Failure to perform an adequate refined analysis of Class I visibility impacts in general and specifically in relationship to the National Regional Haze regulation mandating the maintenance of visual air quality on the 20% cleanest days.
 -
2. The estimated exceedences of PSD increments presented in FEIS are under predicted due to using lower than actual ambient background concentrations and an underestimation of direct PROB&G and cumulative regional emissions.
3. Argonne's refined visibility analysis has significant problems due to: (1) unverified and uncritically accepted performance of the CALMET/CALPUFF model system; (2) a failure to adequately describe the use of transmissometer data as an indication of daily background visibility levels; and (3) a failure to use daily modeled pollution increments to analyses the visibility impacts on 20% cleanest and 20% haziest days.
4. A specific problem area of the emission inventory is that existing techniques for estimating fugitive dust emissions are incomplete, inadequate, and probably severely underestimate the actual PM₁₀ and PM_{2.5} emissions.

5. In addition to the use of out-dated emission factors, major sources of fugitive dust emissions directly associated with the proposed PRBO&G Project are still excluded in the Argonne analysis:
 - Increased road dust emissions due to increased non-project travel (recreational, curiosity, miscellaneous) on new dirt roads developed specifically for the PRBO&G project;
 - Increased wind blown dust from surfaces disturbed by CBM development due to the fact that disturbed surfaces produce significantly more fugitive dust than undisturbed surfaces (WGA, 2001); and
6. The emission inventory used to model air quality and visibility impacts specifically excludes known PRBO&G Project and Reasonably Foreseeable Development sources. Thus, the predicted project and cumulative air quality exceedences and visibility impacts will be greater than stated in the FEIS.
7. The Argonne "refined" visibility analysis is incomplete and very probably underestimates the actual visibility impacts that will occur from the regional development.
8. BLM has decided to not complete or report the results of an extensive analysis of the possible degradation of the cleanest 20% days at surrounding Class I areas. The visibility on these days is mandated by the Regional Haze Rule to not be degraded.

CONCLUSION

The BLM's Final Environmental Impact Statement and Proposed Plan Amendment for the Powder River Basin Oil and Gas Project completely fails to satisfy BLM's obligations under the Federal Land Policy Management Act, the National Environmental Policy Act, the Clean Air Act, the Clean Water Act and the applicable state and federal requirements under those statutes.

The BLM must step back from industry's plan and pursue a proposal and plan amendment that is in the interest of all affected parties and resources. In the foregoing pages and numerous attachments, we have clearly pointed out where this document is seriously flawed, erroneous and fails to meet either the letter or the spirit of the law. The right and proper thing for the BLM to do is to proceed responsibly, to address and correct these crippling deficiencies and propose an alternative that will move forward with the development of these important mineral resources without completely sacrificing the people, land, water, wildlife and air of the Powder River Basin. We have an important legacy to pass on regarding all the resources in the Powder River Basin. We will not allow the BLM to let it be one of "rape, ruin and run." In the words of Theodore Roosevelt, "I recognize the rights and duty of this generation to develop and use the natural resources of our land; but I do not recognize the right to waste them or rob, by wasteful use, the generations that come after us."

Respectfully Submitted,

Nancy Sorenson, Chair

Powder River Basin Resource Council

Dale Ackels, Board member

Powder River Basin Resource Council

Jill Morrison, Organizer, Gillian Malone, Organizer, Kevin Lind, Director

cc. Paul Beels, Project Manager