WYOMING OUTDOOR COUNCIL • THE WILDERNESS SOCIETY • GREATER YELLOWSTONE COALITION • UPPER GREEN RIVER VALLEY COALITION • NATURAL RESOURCES DEFENSE COUNCIL • BIODIVERSITY CONSERVATION ALLIANCE • JACKSON HOLE CONSERVATION ALLIANCE • NATIONAL WILDLIFE FEDERATION • WYOMING WILDLIFE FEDERATION

April 5, 2007

Mr. Matt Anderson, Project Lead
Bureau of Land Management
Pinedale Field Office
432 East Mill St.
P.O. Box 768
Pinedale, Wyoming 82941-0768

Re: Comments on the Draft Supplemental Environmental Impact Statement for the Pinedale Anticline Oil and Gas Exploration and Development Project

Dear Matt:

Please accept these comments of the Upper Green River Valley Coalition, Greater Yellowstone Coalition, The Wilderness Society, Natural Resources Defense Council, Biodiversity Conservation Alliance, Jackson Hole Conservation Alliance, National Wildlife Federation, Wyoming Wildlife Federation, and the Wyoming Outdoor Council on the above-referenced Bureau of Land Management (BLM) environmental impact statement (hereinafter referred to as the "SEIS"), which was released for public comment in December, 2006.

THE ENVIRONMENTAL IMPACTS THAT HAVE OCCURRED AND THAT WILL OCCUR DUE TO THE MASSIVE NATUAL GAS DEVELOPMENT ON THE PINEDALE ANTICLINE ARE SEVERE

Prior to the late 1990s, the Pinedale Anticline was an area of "little or no development." PAPA DEIS at 1-1.[1] There were only 30 active oil and gas wells at this time. Id. at 3-1. At this time the area was a vast open space dominated by sagebrush, and wildlife in the area was thriving.[2] Much of it had special importance for huge wintering herds of mule deer and

[1] In 1999 BLM prepared the Draft Environmental Impact Statement (DEIS) for the Pinedale Anticline Oil and Gas Exploration and Development Project area (PAPA). This document will be referred to as the PAPA DEIS herein. Soon after the BLM also prepared the Final Environmental Impact Statement (FEIS) for the PAPA, and the Record of Decision (ROD) for the PAPA in 2000. These documents will be referred to herein as the PAPA FEIS and PAPA ROD, respectively.

[2] See generally Hall Sawyer et al. 2005. 2005 Annual Report, Sublette Mule Deer Study (Phase II): Long-term Monitoring Plan to Assess Potential Impacts of Energy Development on Mule Deer n the Pinedale Anticline Project Area. Western Ecosystems Technology (WEST), Inc., 52 pp (hereinafter "Sawyer 2005"). Hall Sawyer et al. 2006.

pronghorn, as well as large populations of sage grouse.[3] "The project area contains some very unique natural resources." PAPA DEIS Executive Summary at 1. Since then the area has been radically transformed by natural gas development, and the BLM is preparing to approve a far greater environmental transformation under the auspices the SEIS.

In 2000 BLM began the industrialization of the Pinedale Anticline by approving the PAPA ROD, which allowed the drilling of 900 initial well pad locations, allowing 700 producing wells and/or well pads. PAPA ROD at 5. Since then, under authority of the 2000 PAPA ROD, the BLM has permitted the total number of wells on the Pinedale Anticline to increase to approximately 662 by the end of 2006, and there were approximately 348 well pads by the end of 2006. SEIS at iv. Thus, an area that had "little or no development" only six or seven years ago has already been substantially industrialized due to oil and natural gas development.

The BLM deemed the management guidance it has been utilizing for oil and gas development on the Pinedale Anticline under the PAPA ROD the "Resource Protection (RP) Alternative on Federal Lands and Minerals." PAPA ROD at 1. As will be discussed in the next section, implementation of this "Resource Protection" Alternative has nevertheless led to numerous, severe environmental impacts.

The Resource Protection Alternative Has Caused Severe Environmental Impacts To Date

Under the "Resource Protection" Alternative approved in the PAPA ROD, massive environmental degradation has already occurred on the Pinedale Anticline in just the 6 years subsequent to approval of this management framework. This degradation is documented in the SEIS. Examples include the following.

The gas field has disturbed visual quality on 354 acres of Visual Resource Management (VRM) Class II areas in the Pinedale Anticline and on another 1,093 acres in VRM Class III areas. SEIS at 3-44, 3-45 (Map 3.9-1). The objective for Class II areas under the BLM's 1988 Pinedale Resource Management Plan (RMP) is "to retain the existing character of the landscape. The level of change to the character of the landscape should be low." In Class III areas the objective is to "partially retain the existing character of the landscape." BLM recognizes that "Visual resources in the localized areas of VRM II and VRM III have been significantly impacted" already by the existing development. SEIS at 4-51.

Existing development has also disturbed the historic Lander Cutoff of the Oregon Trail, which bisects the central part of the Pinedale Anticline. This important historical resource is listed on the National Register of Historic Places. Over 67 acres of wellfield disturbance have already been permitted within 0.25 miles of the Lander Cutoff, a buffer area that both the RMP

2006 Annual Report, Sublette Mule Deer Study (Phase II): Long-term Monitoring Plan to Assess Potential Impacts of Energy Development on Mule Deer n the Pinedale Anticline Project Area. Western Ecosystems Technology (WEST), Inc., 115 pp. (hereinafter "Sawyer 2006").

[3] "The PAPA contains one of the largest and highest density (19 to 30 deer/km2) mule deer winter ranges in Wyoming' (S. Smith, Wyoming Game and Fish Department, Cheyenne, Wyoming, unpublished data)." See Hall Sawyer et al. 2006. Winter Habitat Selection of Mule Deer Before and During Development of a Natural Gas Field. Journal of Wildlife Management 70(2):396–403.

and the PAPA ROD recognize as requiring "no new disturbance" in order to ensure this historic resource is not degraded. SEIS at 3-50, 3-51 (Map 3.10-1). PAPA ROD at 29.

Prior to development intensifying, the Pinedale Anticline was categorized as a "Farm in Valley" noise environment relative to the background level of noise. With the development that has occurred, BLM recognizes that noise from well pads is at approximately 55-70 dBA, and that "the distances at which engine noise would attenuate to 49 dBA [10 dBA above the 39 dBA background level permitted under the PAPA ROD] at noise sensitive sites (dwellings, greater-sage grouse leks) defined in the PAPA ROD range from 543 to 2,828 feet." SEIS at 3-66. Clearly given the 662 wells in place on 348 well pads, the Pinedale Anticline has become a noisy place where the 49 dBA standard would be exceeded in many areas on the Anticline. As recognized by BLM, "significant impacts have most likely occurred." SEIS at 4-76. And since "significant impact could occur over 3.5 times the distance used to define impact significance in the PAPA DEIS," it is obvious that noise is already a severe environmental problem on the Pinedale Anticline, at a minimum affecting sage grouse because "the 0.25 mile buffer surrounding leks . . . is insufficient to maintain function of lek habitats due to wellfield activities (road use, drilling) and associated noise." SEIS at 4-76 to 4-77 (citation omitted).

Wildlife, specifically mule deer, pronghorn, and sage grouse, have already been severely harmed by the existing development, as has become widely recognized. A study being conducted on the Pinedale Anticline has shown that pronghorn exposed to oil and gas development (treatment group) had only 69.3 percent survival rates while the control group not exposed to natural gas development had 95 percent survival rates.[4] SEIS at 3-108. Studies are indicating that fragmentation of habitat due to natural gas development is leading to reduced use by pronghorn, with pronghorn appearing to abandon habitat where habitat patch sizes becomes about 600 acres or less. Id.

The studies by WEST, Inc. (Sawyer 2005, Sawyer 2006) have documented severe impacts to mule deer due to natural gas development on the Pinedale Anticline. There is a "consistently declining" mule deer population on crucial winter ranges on the Mesa portion of the Pinedale Anticline. SEIS at 3-111. In fact, there has been a "disconcerting" 46 percent decline in the mule deer abundance on the Pinedale Anticline since natural gas development intensified in about 2000, with no similar decline in the control area not subject to natural gas development. Sawyer 2005 at 45. This decline is not explained by the deer simply "moving somewhere else:" evidence shows the deer are not using alternative habitats and they are not emigrating in substantial numbers. Id. See also Sawyer 2005 at 46 (reduced over-winter fawn survival and lower adult survival coupled with limited emigration likely explain the decline in mule deer abundance); Sawyer 2006 at 6-18, 6-20 (same, and "The weight of the evidence suggests the observed deer decline in the treatment area was due primarily to reduced survival rates associated with [natural gas] development activities and secondarily to limited amounts of emigration"). Moreover, deer have increasingly avoided areas where natural gas development

[4] While this difference was not statistically significant, the magnitude of this difference cannot be ignored. It seems likely that if the sample sizes were increased or other experimental design features for the control or assessment of variation were implemented a mean differences of this magnitude would almost certainly be deemed very real, that is, statistically significant. A difference in mean values of this magnitude cannot be dismissed just because statistical significance has not been shown yet.

has occurred; areas that were once high-use areas for deer that have become developed are now avoided by deer. SEIS at 3-11. See also Sawyer 2005 at 44-45 (by Year 3 of development 41% of areas classified as high use prior to development were now medium or low use, and 40% of the areas that had been classified as low use had become medium- or high-use areas; and the highest use areas were approximately 3-4 km away from well pads); Sawyer 2006 at 4-18 to -19 (presenting additional information on the abandonment of high use areas following development). These changes in habitat use were immediate, there is no indication that deer habituate to the development, and in all likelihood these changes mean deer are being displaced to less suitable habitat. Sawyer 2005 at 44-45; Sawyer 2006 at 4-18 to -19.

The picture with sage grouse is no less grim. There is evidence of a long-term declining sage grouse population, and of lek abandonment. SEIS at 3-115. The impacts of oil and gas development are clearly implicated in this. The number or male birds attending leks that were heavily impacted by natural gas development "declined by 52 percent from 1 year prior to well development through 2004. Id. at 3-117.[5] "Strutting male numbers decreased with increased traffic volumes within 1.86 miles of the leks and increased noise intensity estimated at leks. The decline has been attributed to displacement of males and low recruitment of yearling males on impacted leks [ ]." Id. The work of Matthew Holloran on the Pinedale Anticline has also shown that existing oil and gas development is causing "yearling females [to] select nesting locations farther from haul roads and active drilling rigs, suggesting the long-term response of nesting females is avoidance of development areas [ ]." Id. at 3-118. Winter habitat is also important for sage grouse and BLM recommends "no disturbance or disruptive activities within greater sage-grouse winter habitat from November 15 through March 14," a recommendation which is not likely being followed given that BLM does not know where wintering habitat is on the Pinedale Anticline, although it does know wintering sage grouse use the Pinedale Anticline. Id.

And last, there is no doubt that the initial rush of development in the last 6 years pursuant to the PAPA ROD has also had major impacts on air quality. As things stand now, and based on actual emissions in the wellfield in 2005, BLM estimates that wellfield activities on the Pinedale Anticline are already causing violations of the legally binding increment for increased pollution in Class II areas for PM_{10} and nitrogen dioxide (NO_2). SEIS at 3-64, Table I-8. The emissions from the field are causing significant visibility degradation of greater than 1 deciview (dv) in the Bridger Wilderness Area on 45 days per year, and even Grand Teton National Park is experiencing 1 day per year of impacts greater than 1 dv due to current emissions from the Pinedale Anticline field. Id. at 3-64, Table I.9.

Even More Extreme Impacts Will Result Under BLM's Preferred Alternative C

As shown, under what now must be considered the euphemistically or optimistically entitled "Resource Protection" alternative that has guided management on the Pinedale Anticline for the last six and one-half years, there has been little in the way of resource protection, and much in the way of resource degradation. Now BLM plans to allow for far more in the way of environmental degradation.

[5] Citing the work of Matthew Holloran. See SEIS at 6-7. See also id. at 6-8 (providing citation to another study of sage grouse on the Pinedale Anticline done by R.C. Kaiser).

In the SEIS BLM presents three alternatives. One is continuation of the existing management, the "Resource Protection" alternative, approved under the PAPA ROD (called the "no action" alternative in the SEIS). The other two alternatives (Alternatives B and C) differ little; both would allow for a massive increase in the industrialization of the Pinedale Anticline. Both Alternatives would allow 4,400 additional wells to be drilled, and the amount of surface disturbance would be allowed to increase from the currently estimated 4,484-acres initial disturbance level to over 12,000-acres of initial disturbance. SEIS at 2-21, 2-27, 2-37. Alternative C is "BLM's Preferred Alternative." Id. at Dear Reader Letter page 2 ("BLM's Preferred Alternative (Alternative C) is similar to the Proposed Action Alternative . . . ."). Implementation of this alternative will transform already highly disturbed multiple-use public lands that have "some very unique natural resources" into a virtually single-purpose industrial landscape where environmental degradation is massive.

Under BLM's Preferred Alternative, impacts to VRM Class II and Class III areas would increase greatly. By 2003, 748 additional acres in Class II areas would be visually degraded due to "disturbance" and 1,960 additional acres in VRM Class III areas would be impacted. SEIS at 4-50. This would bring total disturbance in Class II areas to 1102 acres (out of 22,013 acres), or 5 percent of all VRM Class II areas. Id. at 3-44, 4-50. Total disturbance in Class III areas would reach over 3000 acres, or 6 percent of the 49,511 acres of Class III areas. Id. As noted above, BLM is under an obligation to "retain" the visual quality of Class II areas, but it is difficult to see how this can be done when 1 acre in 20 of these highly scenic lands will be converted to a natural gas well or related industrial facility. As BLM recognizes, development in Class III areas "would exceed BLM's management objective for the VRM III class" and in Class II areas the already-significantly impacted viewsheds "would be further impacted under all alternatives." Id. at 4-51.

Impacts to the historic Lander Trail would greatly increase. The current impact level of 67 acres would be increased by 212 acres, for a total of nearly 280 acres.[6] SEIS at 4-54 to -55. The entire Lander Trail with its 0.25 mile buffer area is only 3,978 acres, so 7 percent of the Lander Trail would be harmed. This disturbance "would probably change the character of the Lander Trail's use and of physical features within the Trail's setting that contribute to its historic significance, a significant impact . . . ." SEIS at 4-54 to -55. See also id. at 4-59 (reiterating this with respect to Alternative C). Moreover, pipelines associated with this project would create further impacts because they would apparently cut across the Trail. Id. at 4-55.

The Pinedale Anticline will be an increasingly noisy place, a heavy industrial facility in many areas. The fact that noise travels a great distance and thus that its impacts are not "attenuated" for many hundreds if not thousands of feet was discussed above. Now, however, that noise will be associated with an additional 4,400 wells. As noted, this noise will be significantly above background levels at a distance as much as 2800 feet from the drilling operation, and the noise associated with winter drilling may be especially problematic. See SEIS at 3-65 to -66, 4-76 to -78. We would also note that it is not apparent that BLM's consideration of noise impacts took into account the additional 282,538 hp of additional compression that will be installed at existing compressor stations. Id. at 2-29.

[6] Cumulative impacts would be 854 acres of additional disturbance for a total of 921 acres disturbed. SEIS at 4-60.

Sedimentation due to runoff from the industrial facilities in the Pinedale Anticline does not appear to be elevated to date, but that will change with implementation of Alternative C. SEIS at 3-80 to -82, 4-89 to -91. The Mack Reservoir and New Fork River-Alkali Creek sub-watersheds will be especially impacted. Sediment yield (kg/ha) will increase by 73 percent in the New Fork River-Alkali Creek sub-watershed and by 102 percent in the Mack Reservoir sub-watershed. Several other sub-watersheds will see sediment yield increases in excess of 20 percent. BLM concludes that sediment yields in these watersheds would "be increased substantially above current conditions." Id. at vii.[7]

The bald eagle, a threatened species, could be severely harmed by the increased development. "Nesting bald eagles may be affected by surface disturbance and associated human presence by each alternative. The effects are expected to be substantial within 1 mile of the New Fork River riparian zone with potential effects to forest-dominated riparian habitat which is utilized by wintering bald eagles." SEIS at vii. In fact, wellfield development near the New Fork River during the winter could "constitute a "take" situation." SEIS at 4-115. Furthermore, "Implementation of any of the alternatives would generate considerable cumulative disturbance to bald eagle habitats, even if existing non-wellfield disturbance is ignored . . . ." Id. at 4-13.[8]

It is questionable whether mule deer, pronghorn, and sage grouse will be able to continue to exist on the Pinedale Anticline, except perhaps in nominal numbers. If future results from the study of pronghorn in this area "are similar [to initial results], increased surface disturbance on crucial winter range that lead to habitat patchiness would likely contribute to diminished effectiveness and lost function of pronghorn habitats in the PAPA . . . ." SEIS at 4-130. "Decreased traffic as a result of the liquids gathering system would benefit wintering big game, including pronghorn, but is not expected to compensate for traffic associated with wellfield development (drilling and completions) and specifically, traffic during the winter with year-round drilling. . . . . Well field development during winter would reduce habitat effectiveness . . . ." Id.[9]

The already severe impacts to mule deer would intensify under Alternative C. BLM recognizes that "Further loss of habitat effectiveness and habitat function may continue as more development occurs." SEIS at 4-132. And,

> Mule deer avoidance of roads with very high and high traffic volume would likely become more extensive throughout the crucial winter range as roads with higher traffic volumes proliferate. Mule deer would avoid habitats adjacent to roads with higher traffic volumes by up to 3 or 4 miles under all alternatives. Crucial winter

[7] BLM's 1988 RMP includes Appendix G -Standards for Healthy Public Rangelands, in which Standard #1 states that "Within the potential of the ecological site…soils are stable and allow for water filtration to provide for optimal plant growth and minimal surface runoff." (See http://www.blm.gov/rmp/WY/application/rmp_browse.cfm?rmpid=29&idref=27853#27853.

[8] The 1988 BLM RMP states that, "Threatened and endangered (T&E) species and their habitats will be protected." See http://www.blm.gov/rmp/WY/application/rmp_browse.cfm?rmpid=29&idref=27666#27693.

[9] This is in direct conflict with the Wyoming Game and Fish Department's recommendations to maintain habitat effectiveness.

> habitat in all areas adjacent to wellfield development, especially habitats proximate to well drilling locations and roads with high traffic volume, would remain ineffective as mule deer habitat for the duration of wellfield development.

Id. An additional 3,411 acres of crucial winter range would be lost, in addition to the 1,518 acres that have already been lost. Id. 4-131. This is nearly 5,000 acres, 7.8 square miles, of crucial habitat.

Increased impacts to sage grouse due to the intensified development would be equally extreme. "Continued loss of habitat function is likely with levels of development under all of the alternatives through 2011 and under the Proposed Action and Alternative C through 2023 [ ]." SEIS at 4-134. BLM goes on to acknowledge that "Under all alternatives, effectiveness of greater sage-grouse breeding (leks), nesting, and brood-rearing habitats would continue to decline, as they have through 2006." Id. In fact, "it is uncertain if habitats would still provide some function to greater sage-grouse by 2023." Id. That is, it is far from certain if sage grouse will even continue to exist on the Pinedale Anticline. "Habitat may not provide function even if development activities are restricted within 2-mile buffers of leks . . . to protect greater sage-grouse nesting habitat. Noise, traffic, and habitat elimination would all contribute to diminished effectiveness of habitats used by greater sage-grouse during winter, during breeding, nesting, and brood rearing, through 2023." Id. In other words, the entire life cycle of the sage grouse will be threatened.[10]

Air Quality will also continue to suffer massive degradation. At least for the first few years of the Pinedale Anticline 4,400-well infill project, BLM states that it will violate the Clean Air Act by allowing activities that will cause the exceedance of air quality standards (increments) in Class II airsheds. The NO_2 Class II increment will be violated in and near the Pinedale Anticline field. SEIS Tables M-1, M.15, M.29. PM_{10} Class II increments will also be exceeded at least during the initial stages of the Pinedale Anticline infill. Id. at Tables M.15, M.29. Impacts to visibility in the Bridger Wilderness Class I area will initially be in the range of 40-60 days per year of significant degradation in excess of 1 dv, and even after BLM implements greater mitigation measures, impacts will still be in the range of 10-25 days per year. SEIS at Tables M.16, M.30. If standards used by other agencies such as the Forest Service are used to measure impacts to visibility, the impacts are far greater than those noted above.[11] See, e.g., Exhibit 1 at 13 (presenting the level of impacts at the 0.5 dv level).[12] Moreover, as will be discussed in some detail below, the BLM Pinedale Field Office has a poor record of implementing its commitments for mitigation for the Pinedale Anticline, so BLM's statements that it will implement "Phase II" mitigation must be viewed with that history in mind—impacts

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[10] Sagebrush obligate songbirds and other sagebrush obligate species will likely suffer many of the same impacts that sage grouse suffer. See SEIS at 4-135.

[11] These agencies, unlike the BLM, are given direct responsibility under the Clean Air Act for protecting air quality in Class I areas, and thus their standards are highly relevant to analysis of environmental impacts even if BLM has adopted a different standard. Impacts at the 0.5 dv level should be reported in the text of the SEIS and not relegated to tables in technical supplements where few will see the information. Putting this important and relevant information in these obscure parts of the SEIS defeats a fundamental underpinning of NEPA, which is to allow for informed public comment and participation.

[12] We request that this report be considered in its entirety as BLM considers impacts to the Bridger Wilderness Area in the SEIS. The entire report, including Exhibits, is available at http://www.wyomingoutdoorcouncil.org/.

could well remain as severe as predicted at the Phase I mitigation level for the entire life of the project. The only thing that is assured is further severe degradation of air quality.

Implications Of The Extreme Environmental Impacts That Are Being Created

The implications of these massive environmental impacts are many. For one, the magnitude of these impacts means that BLM must meet a very high standard of environmental review to meet its obligations under the National Environmental Policy Act (NEPA). It certainly cannot rely on the existing PAPA DEIS, FEIS, and ROD to meet its obligations under NEPA relative to this new 4,400 well infill proposal. The SEIS must meet the requirements for adequate NEPA review standing alone because the prior NEPA documents provide no basis for evaluating or understanding the environmental impacts that have already resulted on the Pinedale Anticline, and which will result due to the massive increase in development. Environmental impacts have already exceeded anything considered in the PAPA EIS, and future impacts would be still greater. That is, while BLM deems the SEIS a "supplemental" environmental impact statement (EIS), in fact this is not a supplemental review; for practical purposes this is an entirely new and massively expanded project with far greater impacts than previously considered that cannot stand on the prior environmental review in the PAPA DEIS, FEIS, and ROD, and thus this "supplemental" EIS must meet the standards for an EIS. No lesser standard of quality will pass legal muster. As will be discussed below in much more detail, the SEIS is woefully inadequate in this regard.

The information above also shows how irrational it is for BLM to dramatically increase and speed up the development on the Pinedale Anticline in the manner it presents in the SEIS. The current plan for development under the PAPA ROD, which BLM deems inadequate for future application, is already causing massive environmental impacts; there is no "Resource Protection." Now, under its preferred alternative, BLM plans to dramatically increase the development and resulting environmental impacts. Yet as will be shown in the next two sections, BLM has failed to give the required "hard look" to these extreme environmental impacts that is required by the NEPA and also failed to give consideration to alternatives that would allow it to reduce those impacts so as to maintain the "very unique natural resources" in this area.

BLM HAS FAILED TO TAKE A HARD LOOK AT THE ENVIRONMENTAL IMPACTS THAT WILL RESULT FROM INCREASED DEVELOPMENT ON THE PINEDALE ANTICLINE

BLM is required to give a "hard look" to environmental impacts in the SEIS in order to comply with NEPA. This hard look must include a full and complete consideration of the direct, indirect, and cumulative impacts of the Pinedale Anticline project considered together with connected, similar, and cumulative actions. ". . . NEPA places upon an agency the obligation to consider every significant aspect of the environmental impact of a proposed action . . . ." Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc., 435 U.S. 519, 553 (1978). As will be discussed below, the SEIS fails to provide this hard look at a number of highly significant environmental impacts, or aspects of those impacts. And as noted

above, the SEIS is not excused from this failure merely because it is deemed "supplemental." Given the immensity of the impacts, full compliance with the NEPA is required.

Several other commenters have submitted comments on the Pinedale Anticline SEIS, and we would like to incorporate the following comments that have been submitted by this reference, in their entirety:

1. Comments submitted by Dr. Clait Braun regarding sage grouse. Attached as Exhibit 2.
2. Comments submitted by Dr. William Alldredge regarding big game (pronghorn and mule deer). Attached as Exhibit 3.
3. Comments submitted by Ms. Cindy Copeland and Ms. Megan Williams regarding air quality. Attached as Exhibit 4.

These comments establish that BLM has failed to give a hard look to environmental impacts to sage grouse, air quality, and big game.

Sage Grouse

Dr. Braun's comments point out a number of flaws in BLM environmental analysis of impacts to sage grouse. These include but are not limited to the following. BLM is not using the best science when it continues to adhere to a 0.25 mile No Surface Occupancy (NSO) buffer around sage grouse leks rather than the scientifically recognized and approved 3 mile buffer. Exhibit 2 at 1, 5-6. BLM has failed to cite to or indicate any reliance on a number of relevant scientific authorities. Id. at 1. Elimination of the application of timing limitation stipulations applicable to sage grouse will be extremely harmful to sage grouse. Id. BLM has failed to consider the highly linked nature of sage grouse populations and the fact that the status of sage grouse populations on the Pinedale Anticline will affect sage grouse populations throughout southwestern Wyoming. Id. at 4. If sage grouse are to remain viable in the Pinedale Anticline area, BLM must determine and provide for minimum populations of sage grouse and habitat areas of sufficient size to maintain these minimum populations, which it has failed to consider or provide for in the SEIS. Id. at 5. Mitigation measures in the SEIS have little or no scientific basis, and specifically, the mitigation measures developed by Connolly et al. 2000 must be followed if viable populations of sage grouse are to be maintained. Id. at 6. In order to maintain viable populations of sage grouse, the peripheral areas outside the core area must be protected from development, with 90 percent of known winter use areas being protected, an area of at least one Township protected, and connectivity corridors of at least one-mile width must be provided for in these areas. Id. at 7. BLM has failed to identify let alone provide any protection for winter habitats, brood rearing habitats, or buffers around leks. Id. at 8. Dr. Braun identifies a number of key recommendations and other provisions that are the "minimum required" to maintain sage grouse populations, and which have not been considered let alone proposed as mitigation by BLM. Id. at 8-11. The implications of these and the many other failings identified in Dr. Braun's comments are that BLM has not taken a hard look at the environmental consequences of this project relative to sage grouse, or provided sufficient mitigation to reduce impacts to sage grouse.

Air Quality

Likewise, the comments submitted by Cindy Copeland and Megan Williams show that BLM has not taken a hard look at air quality issues in the SEIS. Ms. Copeland and Ms. Williams comments show a number of severe deficiencies in BLM's air quality analysis. These include but are not limited to the following. A failure to disclose in an accessible or forthright way many violations of air quality standards that are predicted. Exhibit 4 at Attachment pages 3-4. A failure to include emissions from drilling rigs due to unfounded claims these are "temporary" sources of emissions. Id. at 2. Treating impacts to visibility that had already occurred in 2005 as the baseline against which visibility impacts are measured, preventing progress toward reversing existing visibility degradation. Id. at 4. Failing to discuss the implications of visibility impairment based on the significance level established by the Federal Land Managers charged with the "affirmative responsibility" of protecting visibility in Class I areas (0.5 dv). Id. at 5. Improper or incomplete consideration of the impact that may result due to hazardous air pollutants. Id. 7-8. A failure to fully consider ecosystem impacts in the Bridger Wilderness Area. Id. at 8-9. And last, a wide-spread under-prediction of emissions levels, with resultant under-prediction of air quality impacts; said under-predictions were the result of at least nine flaws in methodology identified in the comments of Ms. Copeland and Ms. Williams. Id. at 9-18. Clearly BLM did not give the required hard look that NEPA requires to air quality impacts.

In addition, BLM's supplemental analysis of ozone impacts suffers from the following problems:[13]

1. The ozone modeling analysis focuses on violations of the National Ambient Air Quality Standards (NAAQS) and Wyoming Air Quality Standards (WAAQS). However, ozone concentrations at levels below these standards can also adversely affect human health and vegetation. A complete assessment should consider 8-hour average ozone concentrations of 0.06 ppm or higher as potentially having adverse health impacts, and should also consider cumulative ozone measures such as sum06 for effects on vegetation. See U.S. EPA (2007) Review of the National Ambient Air Quality Standards for Ozone, Policy Assessment of Scientific and Technical Information, OAQPS Staff Paper, EPA-452/R-07-003, January, available at http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_cr_sp.html. The need to consider these potential impacts is emphasized by the fact that maximum ozone concentrations will be far in excess of the NAAQS/WAAQS, reaching concentrations of 0.105 to 0.118 ppm. SEIS Ozone Supplement at Table 2.2.

2. The CALGRID model used in the SEIS Ozone Supplement has only been run for a single year, which may not be representative of meteorological conditions that are conducive to elevated ozone concentrations. BLM should perform ozone modeling for multiple years, as required in regulatory analyses, and should assess how the meteorology in the years selected compares to other recent years in terms of meteorology conducive to ozone formation.

3. Although CALGRID was run for a whole year, the model apparently was not set up to reflect seasonal variations in critical parameters and inputs, including emissions and deposition

[13] BLM's ozone analysis for the SEIS is presented in the SEIS Supplement Ozone Modeling Analysis (February, 2007), hereinafter SEIS Ozone Supplement.

parameters. The SEIS Ozone Supplement Air Quality Impact Analysis TSD (Supplement) (AQIA TSD) does not state this specifically, but apparently annual average emissions were used in the model. This is problematic for summertime simulations of ozone because emissions can be highly temperature dependent, with volatile organic compound (VOC) emissions from anthropogenic sources like oil and gas operations as well as emissions from biogenic sources increasing substantially with temperature. Based on the CALGRID input/run parameter files provided with the AQIA TSD, it appears that deposition parameters were not seasonally adjusted. This may be especially important for modeling seasons other than summer, when snow cover or inactive vegetation may reduce deposition rates. The model is also deficient for predicting wintertime concentrations because it cannot account for reflection of sunlight off of snow, which could enhance photolysis rates. Exceedances of the ozone NAAQS and WAAQS are, of course, being monitored during wintertime in the Pinedale area.

4. The CALGRID model was run with 36 km x 36 km horizontal resolution. This is a relatively coarse scale, and will underestimate peak concentrations due to averaging over large grid cells. The coarse scale is also problematic because it cannot adequately resolve terrain height variations such as those in western Wyoming.

5. The input/run parameter files included with the AQIA TSD contain a warning that the run did not contain area source emissions (AQIA TSD p. H-43). This could indicate a significant error in the modeling. Certainly BLM must consider and explain the implications of excluding area sources.

6. The AQIA TSD does not adequately document critical inputs to the model. In particular, the Western Regional Air Partnership (WRAP) website contains multiple inventories and variants of inventories and it is not clear which were used in the SEIS Ozone Supplement analysis. No information is provided in the AQIA TSD about the chemical speciation assumed for the VOC emissions from oil and gas activities or any other sources.

7. The AQIA TSD compares WRAP 2018 Oil and Gas inventory estimates with NEPA-analyzed reasonably foreseeable development (RFD) emissions only for Sublette County, and concludes from this comparison that the WRAP inventory will provide a conservative screening estimate of future ozone levels in western Wyoming. However, this comparison is not sufficient to support this conclusion. Ozone levels result not only from local emissions but also from transport of ozone and its precursors, so emissions from other counties are also relevant. Oil and gas development is also intense in other nearby counties, such as Sweetwater and Lincoln Counties.

8. The AQIA TSD provides no information at all regarding how well the model is performing. A grid modeling exercise that is adequate for planning or regulatory purposes should begin with simulation of a historical case, for which meteorological and air quality observations are available to compare with model results. This was apparently not done with CALGRID as applied here, so there is no basis for understanding whether the model is performing adequately. It is not clear why this wasn't done. Meteorological data for 2002 are available for evaluating the MM5 inputs to the CALGRID model. Additionally, the WRAP also has a 2002 inventory, so it should have been quite feasible for BLM's contractor to run a historical case with 2002

emissions input to CALGRID, and then to compare the modeled ozone concentrations with observations for that year.

9. The very limited set of results presented in the AQIA TSD are not adequate to understand whether the model is working properly or to adequately portray the model's predictions for the 2018 inventory case. Map 2.1 shows maximum predicted 8-hour ozone values, but the concentrations shown on the map at different locations are for different days and time periods. To provide an adequate picture of what the model predicts, it would be helpful to see animations of ozone concentrations across the modeling domain, or at least show static contour plots of concentrations across the model domain for each time period when a peak concentration occurred. Additionally, map 2.2 shows the maximum predicted 4th high 8-hour ozone concentrations at the five locations where the maximum 8-hour concentrations were observed. This is misleading, because the maximum predicted 4th high concentrations may not occur at the same location as the maximum (1st highest) concentrations.

For all these reasons the SEIS Ozone Supplement fails to provide a hard look at impacts that may result from continued development on the Pinedale Anticline. In addition, the following problems or concerns are evident. First, it does not appear the SEIS Ozone Supplement provides an analysis of the direct impacts of the Pinedale Anticline project on ozone levels in the area, either currently, or due to the massively increased development being pursued by BLM. Rather, the overall status of ozone levels due to various emissions sources in Sublette County (cumulative impacts) are considered. AQIA TSD at H-4 to H-5. See also Tables 2 and 2.2. This fails to meet the requirements of NEPA and Council on Environmental Quality regulations, which clearly require consideration of the direct environmental impacts of a project. How much worse will ozone pollution in the Upper Green River Valley be due to the direct impacts of the greatly increased level of development in the Pinedale Anticline field? That critical question appears to be unanswered.

Said differently, the SEIS Ozone Supplement does not inform the reader about whether ozone concentrations in the atmosphere will be getting higher in the area relative to current conditions due to impacts from the project. Yet ozone levels are apparently already very high in this area. Thus, any increase in ozone concentrations might cause exceedance and perhaps violation of the NAAQS and WAAQS. Table 3.11-1 in the SEIS shows that ozone levels are already 0.076, 0.080, and 0.074 ppm at the Jonah Field, Boulder, and Daniel monitoring stations, respectively. The NAAQS/WAAQS is 0.080 ppm for the 4th highest 8-hour concentration in a year, averaged over three years. Given these already very high concentrations at the monitoring stations that BLM itself has deemed most relevant for determining background conditions in the project area, concentrations which are already at or near the NAAQS/WAAQS, the SEIS Ozone Supplement should provide some indication of what the impacts of the nearby Pinedale Anticline project will be on ozone concentrations at these locations. At a minimum, people reside near the Boulder and Daniel stations, so knowing ozone concentrations that will result due to the project in these areas is especially relevant.

It also must be noted that these monitoring stations are the locations where exceedances of the 8-hour ozone standard have been monitored. Consequently, these locations should be of special interest relative to determining and assessing ozone impacts. Yet the SEIS Ozone

Supplement only provides consideration of ozone levels at vaguely defined areas ("Northeastern Lincoln County/Western Sublette County;" "Eastern Sublette County/Western Fremont County") that are related to these monitoring stations and conditions in the Pinedale Anticline field in uncertain ways at best. "Northeastern Lincoln County/Western Sublette Count;" is an area as much as thirty or more miles west of the Pinedale Anticline field. "Eastern Sublette County/Western Fremont County" is 15-20 miles east of the field, and some of it is on the other side of the continental divide. It is not clear what if any relation these areas have to the situation at the monitoring stations much closer to the gas fields where very high ozone levels are already being monitored. Thus, again, the SEIS fails to take a hard look at environmental impacts from ozone pollution.

Finally, with respect to air quality issues, we request that the information in Exhibit 1 be fully considered in the SEIS. Also available at http://www.wyomingoutdoorcouncil.org/ with supporting Exhibits. We specifically ask that BLM address the question of whether impairment of visibility in the Bridger Wilderness Area has or will occur, and what steps BLM will take to prevent this, in light of the information in this report.

Big Game

Dr. Alldredge's expert comments show that BLM has failed to give a hard look to impacts to mule deer and pronghorn populations that use the Pinedale Anticline. These problems include but are not limited to the following. BLM's failure to definitively limit drilling that might occur outside the core area defeats the value of focusing development in the core area. Exhibit 3 at 2-3. Waiting for impacts to be detected through monitoring (or interagency meetings) will not be sufficient to reduce impacts to big game; by the time impacts are detected it may well be too late to remedy them. Id. at 3. BLM's reclamation predictions are fallacious—restoration to shrub communities will take far longer than is acknowledged, and absent restoration of shrub (sagebrush) communities, the habitat will be of little value. Id. at 3-4, 7. BLM's interpretation of the implications of the WEST, Inc. studies is less than forthright due to insistence on "conclusiveness" even though the WEST, Inc. studies are highly suggestive of the impacts that have and will occur due to natural gas development, and the analysis in Appendix K of the SEIS suffers from flaws or can be subject to alternative interpretations that BLM has not acknowledged. Id. at 4-5. BLM estimates of habitat fragmentation are scientifically invalid. Id. at 5. The impacts of pipeline corridors on big game have been improperly ignored, and indirect impacts are improperly characterized. Id. at 5. Mule deer herds on the Pinedale Anticline are a unique sub-population of the Sublette Mule Deer Herd, bringing into question the validity of attempts to lump the Pinedale Anticline herd with the larger Sublette Herd for purposes of analysis in the SEIS. Id. at 6. For all of these reasons and the further reasons explained in Dr. Alldredge's comments, BLM has failed to provide a hard look at impacts to mule deer and pronghorn in the SEIS.

Other Environmental Impacts Where BLM Failed To Provide A Hard Look

In addition to the failure to give a hard look to issues related to air quality, big game, and sage grouse shown by the above comments submitted by experts in these areas, it is apparent that BLM has failed to give a hard look to several other issues in the SEIS. These include issues

related to impacts to water quality, bald eagles, and socio-economic impacts. Those shortcomings will be addressed next.

Water Quality

Some of the effects of natural gas development which may harm surface waters include excessive siltation due to ground disturbance from construction activities; excessive salinity from runoff through salty soils exacerbated by construction activities; excessive siltation from snowpack runoff across gas field-initiated disturbed ground surfaces; industrial pollutants originating from breached pipelines, improperly maintained vehicles, spills, or waste pits intentionally or accidentally discharged into surface waters. Any or all of these may violate the Wyoming water pollution control program, the Clean Water Act, the Endangered Species Act, and the Colorado River Basin Salinity Control Act and other water pollution prevention and aquatic life protection laws. Numerous BLM regulations and policy, such as Onshore Orders, must also be complied with relative to protecting water quality. Since all the sub-watersheds in the Pinedale Anticline project area drain into tributaries of the Upper Colorado River Basin, it has been determined that there is potential from energy development to adversely affect the water quality salinity-based standards in the agreement between the U.S. and Mexican governments.

We would specifically note the objectives of the Wyoming water pollution control program are described in W.S. 35-11-102. These objectives are designed to serve the interests of the state and achieve the related goals, objectives, and policies of the federal Clean Water Act. Surface waters within the project area are classified as Class 1 or 2AB waters by the state of Wyoming. The New Fork River, to which most of the sub-watersheds in the project area drain, is Class 2AB.

Class 2AB waters are those known to support game fish populations or spawning and nursery areas at least seasonally and all their perennial tributaries and adjacent wetlands are included. Class 2AB waters include all permanent and seasonal game fisheries and can be either "cold water" or "warm water" depending upon the predominance of cold water or warm water species present. Unless it is shown otherwise, these waters are presumed to have sufficient water quality and quantity to support drinking water supplies and are protected for that use. Class 2AB waters are also protected for non-game fisheries, fish consumption, and aquatic life other than fish, primary contact recreation, wildlife, industry, agriculture and scenic value uses.

The objectives of the Wyoming water pollution control program in relation to waters within the project area is to provide, wherever attainable, the highest possible water quality commensurate with maintaining designated uses. The fisheries use includes water quality, habitat conditions, spawning and nursery areas, and food sources necessary to sustain populations of game and non-game fish. The following uses are also protected in Class 2AB waters in the project area:

1. Drinking water - The drinking water use involves maintaining a level of water quality that is suitable for potable water or intended to be suitable after receiving conventional drinking water treatment.

2. Recreation - Recreational use protection involves maintaining a level of water quality which is safe for human contact. It does not guarantee the availability of water for any recreational purpose.

3. Scenic value - Scenic value use involves the aesthetics of the aquatic systems themselves (odor, color, taste, settleable solids, floating solids, suspended solids, and solid waste) and is not necessarily related to general landscape appearance.

4. Aquatic life other than fish - This use includes water quality and habitat necessary to sustain populations of organisms other than fish in proportions which make up diverse aquatic communities common to the waters of the state. This use does not include the protection of insect pests or exotic species, which may be considered "undesirable" by the Wyoming Game and Fish Department or the U.S. Fish and Wildlife Service within their appropriate jurisdictions, and human pathogens.

5. Wildlife - The wildlife use includes protection of water quality to a level which is safe for contact and consumption by avian and terrestrial wildlife species.

Wyoming state water quality regulations state that water uses in existence on or after November 28, 1975 and the level of water quality necessary to protect those uses shall be maintained and protected. Those surface waters not designated as Class 1, but whose quality is better than the standards contained in the regulations, are to be maintained at that higher quality.

Additionally, in all Wyoming surface waters, substances attributable to or influenced by the activities of man that will settle to form sludge, bank or bottom deposits shall not be present in quantities which could result in significant aesthetic degradation, significant degradation of habitat for aquatic life or adversely affect public water supplies, agricultural or industrial water use, plant life or wildlife. And, floating and suspended solids attributable to or influenced by the activities of man shall not be present in quantities which could result in significant aesthetic degradation, significant degradation of habitat for aquatic life, or adversely affect public water supplies, agricultural or industrial water use, plant life or wildlife.

All Wyoming surface waters must also be free from substances and conditions or combinations thereof which are attributable to or influenced by the activities of man, including but not limited to pipeline and wellpad construction, road building and maintenance, in concentrations which produce undesirable aquatic life. High sediment loads, low dissolved oxygen, high turbidity, excessive salinity, and other characteristics of streams that have been altered directly or indirectly by humans can lead to conditions which are ripe for undesirable species.

Furthermore, Class 1, 2 and 3 waters of Wyoming must be free from substances, whether attributable to human-induced point source discharges or nonpoint source activities, in concentrations or combinations which will adversely alter the structure and function of indigenous or intentionally introduced aquatic communities.

With these background requirements in mind, we turn to several concerns we have with the water quality analysis in the SEIS.

Erosion, Sediment Transport, Salt Loading, and Modeling

Many of the impacts of increased sedimentation due to implementation of the action alternatives considered in the SEIS were discussed above. The BLM admits that it is likely water quality will be adversely affected by erosion of topsoil into streams, as well as increased salinity streams within and downstream of the PAPA, which may not be in compliance with the Colorado River Basin Salinity Control Act (SEIS:viii).

Annual sediment yields would be increased substantially above current conditions in six hydrologic sub-watersheds that coincide with the Anticline Crest. Surface water quality could be impacted under all alternatives if Best Management Practices (BMP) are not used extensively to prevent erosion and (if) reclamation is not timely. (SEIS:vii)

The 2006 report by HydroGeo in App J of the SEIS, " . . concludes that there is currently negligible sediment transport off low slopes in the PAPA (SEIS:3-82), but that "(s)oils on steeper slopes are especially subject to water erosion and are difficult to reclaim . . ." (SEIS:Vol 2:App J:4). Much of the existing gas field development is near or on slopes of 15% or greater (SEIS:Map3.17-1), and proposed development will be on or near steep slopes. According to the models used by HydroGeo,, "an average of 800 metric tons of sediment is mobilized each year in the PAPA under current conditions. . . Larger storms move it out of the basins," (SEIS:3-82). "Increased erosion and sediment transport could lead to increased salinity in the Green River . . . (A)ny salt loading associated with this project could have implications concerning the Colorado River Basin Salinity Control Act . . ." (SEIS:Vol2:AppJ:5).

All erosion, sediment transport, and salt loading estimates and ranges of impacts appear to be from two modeling efforts, the KINEROS2, an event oriented model; and the SWAT, a continuous time model, also called a long-term sediment yield model (SEIS:VOL2:AppJ:5). We have some concerns that the BLM must address when using information from both models described in Volume 2 of the SEIS:

1. The models must consider that over time some lands within the Pinedale Anticline project area would be degraded, i.e., denuded of natural vegetation and by removal of stable topsoil, and also that deleterious range conditions would affect runoff. "(S)urface disturbance would continue through 2023 and would consist of 12,273 acres of initial disturbance . . . (SEIS:1-8). There would be a higher number of acres of degraded lands each year as development progressed. Therefore, if the model did not adequately factor in increased likelihood and volume of erosion from ever increasing expanses of "disturbed" land, or increasingly degraded lands, it would be inaccurate. While the DEIS, Volume 2, Appendix J at page 13 does assume that "disturbances" in the PAPA "were simulated for modeling purposes by assuming the land cover changes to equal bare ground," the model needs to also include the erosion from stockpiled soils from wellpad construction, waste pits, and pipelines among other potential erosion sources.

2. It is unclear if the BLM assessed rangeland conditions in the PAPA and analyzed percolation and runoff only under existing rangeland conditions, or if the BLM also analyzed percolation and runoff in rangelands subjected to management changes. It is crucial that changing rangeland conditions be factored into the water quality analysis.

3. Both models appear only to consider rainfall and spring, summer, or fall "storm events" as potentially causing water-induced soil erosion. However, given the high elevation of the PAPA and the accumulation of snowpack during the winter months (SEIS:3-88), soil erosion can also be caused by snowmelt occurring on the lands of the project area. It is not apparent these models considered this factor.

Snowmelt can cause liquidization of surface soils while frozen substrate immediately beneath the viscous layer can remain. This would be similar to the effect described for testing Salt Loading, in Volume 2, Appendix J, page 14: "(W)ater is added to the soil until the soil is saturated and just reaches the flow point." Therefore, even on level surfaces or gentle slopes, snow melting into water cannot, at times, percolate down through the topsoil and into the aquifer. If frozen subsurface soils prevent percolation, then even on gradual slopes this surface flow of meltwater can transport sediment and cause erosion. While such transporting of sediments may not reach perennial streams, when summertime storm events do occur that sediment may indeed be carried into streams.

While snowmelt and surface runoff of the water is natural, various anthropogenic activities may exacerbate the effects of snowmelt, increase erosion of topsoil, and adversely affect river and stream water quality by increasing salinity and suspended solids in perennial streams. This must be considered when modeling effects of erosion in the PAPA, and it is unclear if this was done.

Human activities associated with gas field development and production that may contribute to exacerbated soil erosion during snowmelt are: 1) snowplowing of access and haul roads and well pads; 2) snow storage from plowed office complexes, mancamps, wellpads, and staging facilities (thus increasing the volume of snow in a given location beyond what would naturally be there and subsequently melting); 3) topsoil storage from pad construction; 4) windrows of topsoil from pipeline and road construction; 5) cuts and fills from road construction, thus exposing unnatural, unstable expanses of erodable soils; 6) absence of or inadequate surface water passage culverts. There are possibly other gasfield activities that would exacerbate meltwater erosion beyond those listed here.

Snowmelt, even on gradually sloping terrain, undeniably transports sediment- including dissolved salts- and has for millennia. Eventually, under natural conditions that have extended time frames (e.g., centuries) between disturbances, surface hydrology stabilizes to a condition that typically minimizes erosion of the topsoil. Establishment and succession of plant communities can also stabilize the terrain and minimize erosion in areas that have upper soil horizon layers conducive to plant growth. However, as recognized in the Wyoming Game and Fish Department's Recommendation report, page 25, there has been a "decline in quality and function of watersheds" as a result of human manipulation of the environment and modification of sagebrush habitats. The activities associated with gas field development and operation may be

additive to existing degradation of watersheds cause by, among other things, improper livestock grazing.

Therefore, erosion models must consider any degraded conditions that exacerbate natural erosion, and models that exclude the effects of snowmelt within the PAPA are inaccurate, and must be corrected. They must include erosion opportunities such as those associated with roads, culverts, pads, soil storage, snowplowing, and snow storage and must factor in the increasing acreages of degraded lands that would likely exponentially increase erosion. Erosion models should assess rangeland conditions and changes that might occur to those rangelands. Also, the BLM must enforce construction, monitoring, and corrective measures that eliminate these unnatural erosion opportunities, including other range uses such as grazing which can have an effect on soil compaction, percolation of water, and vegetation. The BLM must also "field check" any predictive model for erosion by monitoring all ephemeral drainages for silt loading. Monitoring the ravines within and down gradient from gas field activities will offer the best information on whether the models are accurate. Monitoring erosion and silt load or sediment transport within and down gradient from gas field activities would also be important for BLM to determine if BMPs and other conservation criteria are being followed by operators, and where violations are occurring. When gas field-related erosion is found, remedial steps must be taken promptly.

Produced Water Discharge

The New Fork River is considered Class 2AB which is the same quality standard as Class 1, which protects the stream from degradation from human activities. The New Fork is a Blue Ribbon trout fishing stream, and thousands of outfitters and private floaters use it annually. Discharge into the New Fork River of treated produced water may be occurring already in 2007 (SEIS:3-82), and assumedly may continue for the development phase of the PAPA. The BLM may not allow development of the gas field to produce excess water that adversely affects water quality of the New Fork, Big Sandy, or Green River through discharge.

We offer here an excerpt pertaining to water quality from SEIS scoping comments submitted to the Pinedale BLM by Greater Yellowstone Coalition, Craig Kenworthy, November 2005:

> Proponents' Proposal for Water Management. Reuse of water, including reverse osmosis and possibly road spreading is an obvious solution to the problem that Anticline Disposal and others have with rapid, unanticipated overflow of current produced water facilities, and is an appropriate adaptation to an inevitable problem.

Additionally, adequate monitoring of the quality of the water discharged into the New Fork must occur, and regular reports must be given to the public and made available at all reasonable times (SEIS:3-79). Some of the produced water, if obtained from the Wasatch Formation may contain dissolved salts as high as 1,500 mg/L (SEIS:3-73). This is more than 3 times the limit of 500 mg/L TDS allowable under the CRBSCF which requires minimizing salt loading into the Colorado River Basin. Water produced from the deeper Lance Formation, ". . .

is suitable only for industrial use, due to elevated TDS, sulfate and hydrocarbons," (SEIS:3-82) (underline added). Therefore, the discharged water must be continuously tested prior to discharge into the New Fork River, and must not exceed suitability standards for discharge into the Colorado River Basin. Moreover, the potential for increased water temperatures due to the release of produced waters must be considered relative to the potential adverse impacts on fisheries in the New Fork River.

Sewage water treated by biotreatment and filtration (SEIS:3-82) may not be discharged into surface waters. While the SEIS at 3-82 describes sprinkler use of treated sewage, it is unclear how much "up to 4 inches per week" actually amounts to. While the water quality is "purported" to meet drinking water standards, this water must be frequently tested, and the results reported to the public regularly and made available at all reasonable times. The amount of treated water needs to be better explained to the public. It is critical that contamination of surface and subsurface waters not occur from discharged sewage.

As suggested by GYC in November of 2005, reusing or re-injecting produced water may be an important component of managing produced water, as well as minimizing the need for surface water withdrawals, which may harm fish (SEIS:3-82). Hydrostatically testing of pipelines with produced water may be feasible, but, again, it is important that the water used for testing be disposed of properly without causing erosion or degradation of surface water quality.

Withdrawals of water from PAPA area streams or rivers may harm fish. While it is imperative that measures be taken "for protection of fish at the pump intake" (SEIS:3-82), we suggest that the BLM, operators, Wyoming Game and Fish Department, and other stakeholders collaborate with area irrigation participants to screen agricultural irrigation intakes to prevent loss of Colorado River Cutthroat Trout and other trout species in area streams. Such a collaborative effort may help mitigate some adverse effects caused at the pump intake on the New Fork River, however, all reasonable measures must be taken not to harm local populations of fish and other aquatics at that location.

Pipelines Crossing Rivers

Trenching and burying pipelines across river channels significantly disrupts stream hydrology by destabilizing stream banks, destroying streamside vegetation, destroying aquatic biota on the stream bottom, destroying spawning sites, and by discharging sediments into the water. The Opal Pioneer Corridor and the Blacks Fork Granger Corridor pipelines are proposed to cross the Green River possibly within the Seedskadee National Wildlife Refuge. The Green River through the Seedskadee National Wildlife Refuge may qualify for designation as an Outstanding Natural Resource water, and requires the highest level of protection. These two pipelines plus the Bird Canyon pipeline corridor are also slated to cross the New Fork River in the PAPA. All mitigation and corrective measures possible must be implemented to minimize the effects described above.

Miscellaneous Concerns Regarding Water Quality

The SEIS at 3-79 states that spill reports and water sampling, " . . are prepared and provided by the SCCD to the PAWG Water Resources Task Group and BLM by December 1 each year. They are reviewed with the public during the annual AEM review, as required by the PAPA ROD." The BLM has recently admitted that this and hundreds of other commitments expressed in the PAPA ROD have not taken place, or have occurred far less than required. The public cannot gain confidence in the BLM for additional development in the project area beyond that authorized in the PAPA ROD if commitments have continued to be broken (Exhibit 8), nor can the BLM authorize additional development if legal directives have not been met.

Appendix J in Volume 2 of the SEIS is important for the public to better understand the erosion potential in the project area, and its impacts on water quality. However one very important visual component missing from Appendix J is to overlay gas field development onto the various maps portraying the modeled erosion. There is no way for the public to correlate gas field development with natural erosive characteristics of the different landscapes. This needs to be remedied before the public can be expected to offer informed comment on the alternatives in this SEIS.

Toxic and Hazardous Wastes and Chemicals

The use of hydraulic fracturing and the impacts of drilling fluids (muds) and chemicals must be fully considered in the SEIS. Hydraulic fracturing and drilling fluids contain a wide array of chemicals, many of which are clearly toxic or hazardous. The appropriateness of using these chemicals must be addressed in the SEIS, and in particular the SEIS and subsequent decision should ensure compliance with all applicable laws relative to the use of these and other toxic and hazardous substances. We specifically recommend that, if "fraccing" is contemplated, the option of requiring water only – i.e., prohibiting the use of toxic chemicals – be considered. The SEIS and decision should provide specific guidance regarding the requirements oil and gas companies must abide by to meet the requirements of these laws, and provide for complete and thorough compliance, monitoring, and enforcement by BLM. Spill prevention and cleanup requirements must be adequately specified, and provisions for collecting and disposing of these wastes must be provided for in detail, with sufficient monitoring and enforcement to ensure compliance. While Federal pollution and toxic and hazardous waste law may provide some exemptions for the oil and gas industry, BLM still has sufficient authority, and responsibility, under NEPA and FLPMA to require inventory and monitoring of these chemicals, as well as spill prevention, cleanup, and mitigation plans. See, e.g., 43 U.S.C. 1732(b); 43 C.F.R. §§ 3162.4-1(a), 3162.5-1(c)-(d); Onshore Oil and Gas Order No. 1. See also Executive Order No. 13,016 (delegating authority to land management agencies to enforce CERCLA on lands they manage); BLM Manual MS-1703 (Hazardous Materials Management).

In a related issue, BLM should ensure that gas field operations (including well pads) comply with any applicable stormwater discharge requirements. Since the PAPA is at sufficiently high elevation to build up snowpack during the winter months, spring melt off and the concomitant anthropogenically-caused erosion and sedimentation of watercourses must be considered, analyzed, and adequately mitigated against. This is particularly important because as

discussed above the SEIS anticipates significant increases in sedimentation. Yet pursuant to Onshore Order No. 1, "the operator must not conduct operations in areas subject to mass soil movement, riparian areas, floodplains, lakeshores, and/or wetlands. The operator must also take measures to minimize or prevent erosion and sediment production." 72 Fed. Reg. 10,308, 10,335 (Onshore Order No. 1 § IV.c.). BLM clearly must ensure that sediment production is at least minimized and if possible prevented in order to meet the NEPA hard look requirement relative to water quality issues.

Nitrate Deposition in the Bridger Wilderness Area—Impacts on Water Quality And Ecosystems

The BLM SEIS fails to address potential water quality impacts associated with the raise in NOx emissions from increased drilling in the Pinedale Anticline project area. The SEIS states that NO_3^- deposition levels are well below "levels of concern" (LOC), a number set at 10 kg N ha^{-1} yr^{-1} and which purportedly describes the "pollutant loadings that a wilderness can tolerate" (SEIS 3-60). It is not clear, what is meant by the vague term "tolerate," but it is clearly shown in scientific literature that 10 kg N ha^{-1} yr^{-1} is well in excess of natural N loading rates in a pristine Rocky Mountain airshed such as that within the Bridger Wilderness (Fenn et al., 2003; Bowman et al., 2006). Just as an example, Bowman et al. (2006) reported shifts in alpine vegetation at a critical value of 4 kg N ha^{-1} yr^{-1}, less than half of the LOC. We strongly urge the BLM to reconsider this LOC and ask it to present an LOC that has a more defensible scientific basis. Furthermore, it is not clear why the SEIS only presents NO_3^- precipitation data for the period of 1990 to 2004 when data are available for 2005 and most of 2006 (USFS, http://www.fs.fed.us/waterdata/).

Below in Figure 1 we present a graph of precipitation NO_3^- concentrations for two lakes within the Bridger Wilderness Area for the period of 2000 - 2006. Precipitation NO_3^- was relatively constant for the period of 2000 - 2004, but then a notable increase is observed in 2005 and 2006. This trend in increasing precipitation NO_3^- is disconcerting and may be directly linked to the dramatic increase in NOx emissions in the Jonah and Pinedale areas during this same time period. The data used in this graph does not represent a loading, but rather as summer rainfall concentration. Summer months were selected, because these months provided the most consistent data (units and entry-wise) and data for November and December 2006 were not yet available. Additionally, discrepancies in snow accumulation vs. precipitation as rain further influenced our decision to use only rain precipitation samples (summer months) in our analysis.

It is our belief that the BLM must consider the impacts of NO_3^- deposition within the Bridger Wilderness as a significant threat to the otherwise pristine condition of the watersheds within the Wilderness boundary and potentially other class I airsheds within the region. Mitigation measures must also be considered for the various alternatives should NO_3^- deposition continue to increase which would create a clear and significant threat to plant community composition (Bowman et al., 2006) and various ecosystem attributes and processes including nutrient cycling, lake and stream chemistry, and trophic cascades (Fenn et al., 2003).

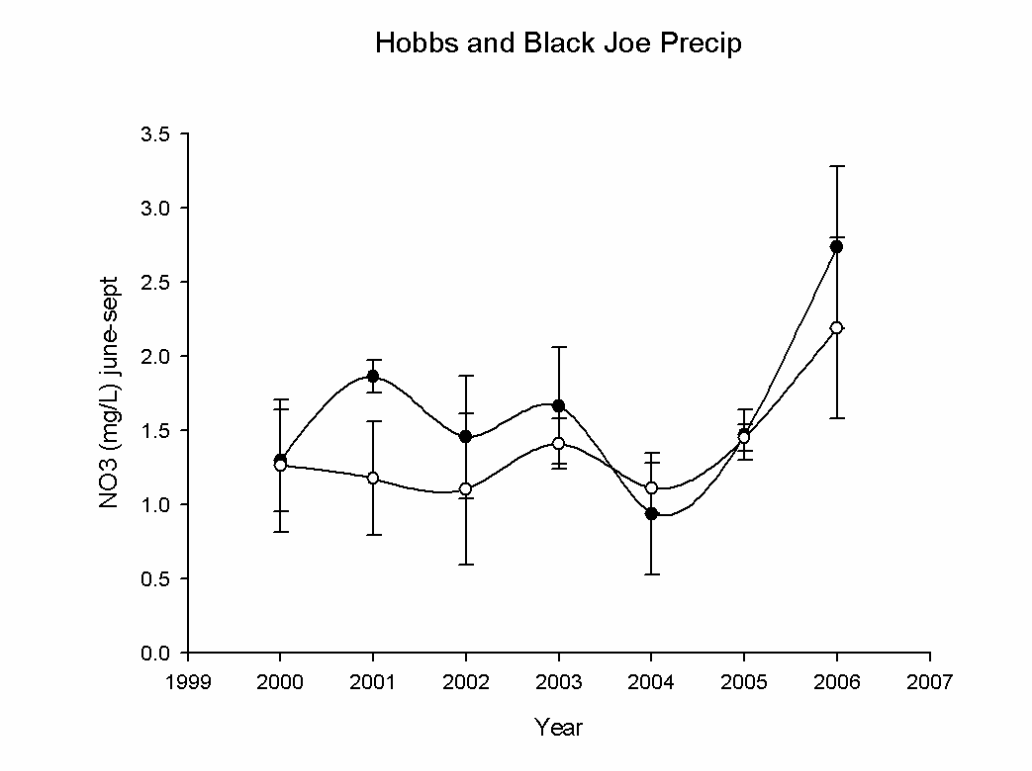

Figure 1. Precipitation nitrate concentrations (mg/L) for summer months for two lakes within the Bridger Teton Wilderness.

Literature Cited:

Bowman, W.D., J.R. Gartner, K. Holland, and M. Wiedermann. 2006. Nitrogen critical loads for alpine vegetation and terrestrial ecosystem response: are we there yet? Ecological Applications 16: 1183-1193.

Fenn, M.E., R. Haeuber, G.S. Tonnesen, J.S. Baron, S. Grossman-Clark, D. Hope, D.A. Jaffe, S. Copeland, L. Geiser, H.M. Rueth, and J.O. Sickman, 2003. Nitrogen emissions, deposition and monitoring in the western United States. Bioscience 53:391-403.

Bald Eagles

The SEIS also fails to give a hard look to impacts that could harm bald eagles in the area. As noted in part one of these comments above, the SEIS recognizes that significant impacts to bald eagles could occur under BLM's preferred alternative. BLM predicts actual take of bald eagles may occur, a situation that could open the operators and potentially even BLM to civil and criminal penalties under the Endangered Species Act (ESA). Substantial impacts to the riparian habitats that bald eagles frequent and require are predicted.

BLM of course is prohibited by the ESA from allowing a take of listed species or authorizing activities that might jeopardize the continued existence of listed species. The ESA,

however, provides additional protections—BLM must further the purposes of the ESA (which are to conserve the ecosystems on which listed species depend and to provide a program for the conservation of listed species) and it has obligations that go beyond the prohibition on creating jeopardy, such as abiding by applicable biological opinions, recovery plans, and pursuing reasonable and prudent measures that can further the recovery of a listed species. The Bald Eagle Protection Act provides additional protections. Given the high degree of protection afforded to the bald eagle, BLM is under a heightened standard to analyze the impacts that might occur to the eagle in the Pinedale Anticline project area and to in fact prevent such impacts.

BLM has provided almost no indication of what will be done to protect the bald eagle from the impacts that it predicts will occur to the eagle. The BMPs the BLM will require are vague and entirely unspecified. SEIS at 2-14. There was no consideration of BMPs relative to how they might prevent impacts to eagles. It is not clear that any of the provisions in Appendix E apply directly to protection of the bald eagle, and there was no analysis of the efficacy of these provisions in this regard in any event. At least with respect to Alternative C (BLM's Preferred Alternative, SEIS at Dear Reader Letter page 2), it is very unclear whether the provisions in Appendix C relative to the bald eagle will apply. SEIS at 2-29 (stating the "development procedures for well field activities" of Appendix C would apply, but failing to indicate whether the Wildlife Habitat Mitigation Plan of this appendix would apply).

The discussion on pages 4-113 to -114 regarding protections that might apply to bald eagles is vague at best. While it appears, but is not certain, that "voluntary" BMPs may apply to private lands where eagles occur, the "FWS cautioned that they would not support activities within recommended protective buffers" (essentially areas within 1 mile of riparian corridors). Id. at 4-114. Despite this, BLM states that "Surface Disturbance within 1 mile of the New Fork River riparian zone would occur under each alternative by 2011," but it goes on to claim, with no analysis, that this disturbance would be "minimal" within 1 mile of existing nests. Id. In fact, 1,833 acres of disturbance within 1 mile of the New Fork River riparian zone will have occurred by 2023. Thus, it is unclear what if any mitigation will actually protect bald eagles from the significant disturbance that is anticipated. Perhaps more importantly, there is no consideration of whether the disturbance that is anticipated will reach a level that the bald eagles currently using the area will no longer be able to do so, or will only be able to do so at reduced levels or for limited purposes (e.g., nesting may no longer occur; the area might only be used for foraging). The potential impacts and mitigation from pipeline construction are described with even less specificity. Id. at 4-119. The SEIS sheds no light on these issues, and thus it fails to give a hard look to impacts that might affect the bald eagle, and to mitigation that might prevent such impacts.

Socio-Economic Impacts

Included in Appendix 1 are comments on the socio-economics analysis in the SEIS. These comments demonstrate that BLM has not taken an adequate hard look at the socio-economic consequences of the Pinedale Anticline project.

Additional Impacts Not Adequately Considered

Many of the other impacts mentioned above in part one of these comments, such as impacts resulting from noise, impacts to the Lander Trail, and impacts to VRM Class II and Class III areas also do not receive a hard look in the SEIS. For example, the severe impacts to VRM Class II and Class III areas are acknowledged by BLM to be significant and not in accordance with the management direction for these areas. The Pinedale RMP ROD states that "Projects of all types within established VRM class areas will generally be required to conform with the objectives and characteristics of the classification, or the project will be modified in order to meet the VRM class objective." RMP ROD at 33. The SEIS engages in no analysis of how BLM's failure to abide by this RMP direction can be excused; perhaps more importantly it engages in no analysis of why the Pinedale Anticline infill project is not being "modified in order to meet the VRM class objective," which is specifically BLM's first obligation under the explicit terms of the RMP. BLM of course must abide by the provisions of an approved land use plan. 43 U.S.C. § 1732(a). Consequently, it is clear that BLM has failed to give a hard look to impacts to VRM Class II and Class III areas, and again, the same is true regarding other resources or issues, such as noise and the Lander Trail.

Conclusion

This SEIS must meet the hard look standards applicable to an EIS; as discussed above the mere fact that it is a "supplemental" EIS provides no basis for a lesser standard of analysis. BLM has approached this EIS as it would any EIS, including substantial scoping efforts to elicit public and agency concerns and input. That is, this is an EIS process, not some lesser process due to the designation of this EIS as "supplemental." This is especially true since the existing PAPA DEIS, FEIS, and ROD have resulted in substantial environmental impacts despite their characterization by BLM as implementing a "resource protection" alternative. Moreover, BLM recognizes the limitations in the existing PAPA DEIS, FEIS, and ROD, characterizing these analyses as having "uncertainty" and "ambiguity." SEIS at 1-5. Consequently, there can be no doubt the "hard look" requirement applies just as fully to this SEIS at it would an initially-prepared EIS evaluating the impacts of a project. But as discussed, BLM's analysis fails to meet this requirement for a thorough hard look at the environmental impacts of the Pinedale Anticline project. As discussed, this is especially true with respect to impacts related to or on sage grouse, big game, air quality, water quality, bald eagles, and socio-economics, as well as impacts to visually protected areas, the Lander Trail, and due to noise.

THE SEIS FAILS TO CONSIDER A REASONABLE RANGE OF ALTERNATIVES—A CONSERVATION ALTERNATIVE MUST BE CONSIDERED

BLM Has Failed To Consider A Reasonable Range Of Alternatives

Council on Environmental Quality (CEQ) regulations require a reasonable range of alternatives to be presented and analyzed in the EIS so that issues are "sharply defined" and the EIS provides "a clear basis for choice among options . . . ." 40 C.F.R. § 1502.14. CEQ regulations and court decisions make clear that the discussion of alternatives is "the heart" of the NEPA process. Environmental analysis must "[r]igorously explore and objectively evaluate all

reasonable alternatives." The "existence of a viable but unexamined alternative renders an environmental impact statement inadequate."

The Alternatives Considered By BLM Are Not A Reasonable Range Of Alternatives

In the SEIS BLM effectively considers only two alternatives that differ minimally from each other. While as required by CEQ regulations BLM presents the "no action" alternative (continuation of implementation of the PAPA ROD Resource Protection Alternative), this alternative will not and cannot be implemented for more than a few years, and moreover, has proven to be inadequately implemented by BLM, thus it is a straw man and does not contribute to consideration of a reasonable range of alternatives. Development on the Pinedale Anticline will soon run into the limits (thresholds) specified in the PAPA ROD, thus precluding further development until additional environmental analysis is performed. Development in Management Area 5 will reach acceptable thresholds in 2009. SEIS at 2-20. Other limits will be reached in 2011 and 2013. Id. And in 2014, the "700 well pad limit in the entire PAPA would be reached." Id. Thus, at most, this alternative could be pursued for only a few more years.

Yet, the purpose and need for this project is to allow the drilling of 4,400 additional wells by 2025 so as to fully exploit the natural gas resource, as proposed by the Pinedale Anticline operators. SEIS at 1-9. Obviously, it is not possible to meet the purpose and need for the project under the existing PAPA ROD "no action" decision—development would not be allowed to reach 4,400 wells over that timeline. Thus, the no action alternative only serves to meet the requirements of the NEPA regulations to consider a "no action" alternative; it does not contribute to any understanding of reasonable alternatives that could actually be implemented for more than a few years. Furthermore, for further development to occur beyond the limits specified in the PAPA ROD, it "would require additional environmental review." SEIS at 2-18. This creates a Gordian knot of sorts: if BLM were to implement the no action alternative it would have to engage in further NEPA analysis within as little as 2 years before it could continue to allow additional wells to be drilled. That is, this SEIS serves absolutely no purpose relative to providing the additional environmental analysis that would be required to allow the existing plan to continue to be implemented.

The only two alternatives considered in the SEIS that might actually be pursued by BLM are Alternatives B and C. As noted above, Alternative C is BLM's preferred alternative. SEIS at Dear Reader Letter page 2. These two alternatives differ only minimally from each other. As noted by BLM, Alternative C is "similar" to the operators proposed action (Alternative B) in "number of wells, drilling rigs, [and] number of new wells pads." SEIS at 2-29. In fact, Alternative C includes "all project components described for the Proposed Action." Id. That is, the number of wells and drilling rigs, well pads, roads and gathering pipelines, trunk pipelines, and ancillary facilities (compressor stations, central gathering facilities, stabilizer facilities, and water truck unloading facilities) differ not at all between alternatives B and C. SEIS at 2-25 to -29. "The estimates under Alternative C, including the number of wells to be drilled, the number of drilling rigs required, the volume of associated traffic, and the size of the required workforce are the same as those described for the Proposed Action Alternative [Alternative B]." Id. at 2-36. Clearly these alternatives differ hardly at all; only the timing of development operations in "concentrated development areas" (Alternative B) versus "development areas" (Alternative C)

differs. And even then, the development follows a very similar path. Compare SEIS at 2-23 to -24 with SEIS at 2-33 to -36.

Thus, again, we are left with an EIS that effectively only considers two very similar alternatives—both involving maximum development of natural gas on the Pinedale Anticline at the maximum rate. This does not meet NEPA's requirement to consider a reasonable range of alternatives. As will be discussed in considerably more detail below, at a minimum BLM was required to consider a true conservation alternative (the existing "Resource Protection" no action alternative fails to meet this need for at least two reasons: (1) its impacts have been documented to be so extreme it cannot honestly be deemed a "resource protection" alternative, and (2) it is not capable of actually being implemented for anything more than a few years). And as noted above, this "supplemental" EIS cannot be deemed subject to any lesser standard for NEPA compliance because in reality it is not a "supplement," it is pursuit of a radically increased level of development on the Pinedale Anticline. Consequently, the SEIS must "rigorously explore and objectively evaluate all reasonable alternatives," as must any EIS. Yet the SEIS fails to meet this requirement because as discussed above the alternatives considered in it differ hardly at all, and because as will be discussed in the next, there were "viable but unexamined alternatives," which renders the SEIS "inadequate."

BLM Improperly Excluded Alternatives From Detailed Consideration

In the SEIS BLM specifically declined to consider in detail a conservation alternative and a "reduced pace of development alternative." SEIS at 2-38 to -40. BLM's reasons for discarding these needed alternatives (which likely are very complimentary and could be combined so as to maximize conservation value) were totally unavailing, to the point of being disingenuous.

BLM states what some of the requirements of a conservation alternative could be, but then attempts to portray any such efforts as being inappropriate or ineffectual. SEIS at 2-38 to -39. It appears that BLM was more interested in dismissing this alternative than in seriously considering the possibility of pursuing an alternative that might require more environmental protection than Alternatives B and C. BLM tries to make the case that requiring Tier-2 technology is impossible or ineffective if seasonal drilling stipulations are also in place. Yet even in the absence of seasonal drilling restrictions in the core area where most drilling will occur, BLM still will not fully implement drill rig emissions reductions for at least 4-5 years. SEIS at 4-74. Thus seasonal drilling restrictions do not per se limit the availability of Tier-2 technology. BLM claims it is "unreasonable to expect that all completions be "green"' but this is a straw man; full compliance with the Department of Environmental Quality's green completion requirements is all that is demanded here, and these guidelines have exceptions for safety issues. BLM admits that "in most cases, Operators would be able to develop the resource on four well pads per section," but then seems to dismiss several of the conservation alternative provisions because "in some locations" this would not be possible. And last, BLM claims "it is unreasonable to require that all operators be connected to the liquids gathering system for all locations" without even considering whether this could be modified so as to still maximize the use of liquids gathering systems in a way that was both "reasonable" and which would maximize conservation. The whole exercise that BLM engages in on pages 2-38 to 2-39 seems to be more akin to a tit for tat than an honest attempt to determine if an alternative that required greater

levels of conservation might be considered in the SEIS, and possibly even implemented on the Pinedale Anticline, an area with very high environmental values that is suffering extreme environmental degradation.

In fact, it appears that what is occurring here is that BLM is presenting a "conservation alternative" that it received during scoping (either as one unified proposal or as an amalgam of various scoping proposals) and then is proceeding to find rationales that allow it to dismiss the elements of the proposal. It is not apparent that BLM developed this conservation alternative. If BLM had made any such attempt, there would be no need for it to offer up dismissive and pejorative "come backs" and rebuttals to the proposal, which is what the discussion on pages 2-38 to -39 consists of. For example, rather than dismissing the use of green completions as "unreasonable," if BLM had developed the alternative it could have said that green completions would be used as provided for by Wyoming Department of Environmental Quality guidance, which allows for safety exceptions, and thus avoided this "unreasonable" problem. See Appendix E at E-7 (requiring use of green completions under Alternative C "unless proven on a case-by-case that flareless completions would be unsafe"). The same is true regarding the "unreasonable" requirement to require all operators to be connected to the liquids gathering system; if such is unreasonable the maximum degree of connection that is reasonable could have been specified as the requirement for this element of the alternative, that is, if BLM was involved in its development. And if limiting the number of well pads to four per section would allow full development of the resource in most circumstances, it would obviously be easy to deal with the occasional exception, that is, if BLM were interested in doing so. All-in-all BLM's dismissal of the Conservation Alternative was inappropriate both because the rationales offered are arbitrary and capricious and because it does not appear that BLM itself even considered this alternative, it only sought to debunk it.

The same is true relative to the "reduced pace of development" alternative. SEIS at 3-39 to -40. Claims that the no action alternative has elements of a reduced pace of development incorporated into are unpersuasive because as discussed above this alternative cannot be maintained for more than a few more years. It is not a viable alternative by BLM's own terms. What is needed for consideration is a reduced pace of development alternative that could also be implemented in fact for the life of the project as defined by BLM. It is unclear what significance there is to the statement that a reduced pace of development would extend the period of development. As will be discussed in great detail below, the BLM has more than sufficient authority to "increase the overall period for development" and in fact has an obligation to do so if needed for conservation purposes. And BLM's claim that reducing the pace of development is contrary to the Energy Policy Act besides being bereft of any citation totally ignores a host of other environmental statues that are equally mandatory as to BLM's actions.[14] The Energy

[14] For example, the purposes of the Endangered Species Act "are to provide a means whereby the ecosystems upon which [listed] species depend may be conserved and to provide a program for the conservation of such [species], and the Secretary of the Interior shall "utilize [programs administered by him] in furtherance of the purposes of this chapter." 16 U.S.C. §§1531(b), 1536(a)(1). The objective of the Clean Water Act is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). The purposes of the Clean Air Act are "to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare . . . ." 42 U.S.C. § 7401(b)(1). See also id. §§ 7470(2), 7491(a)(1) (directing that air quality in protected landscapes and airsheds be protected). Under the National Historic Preservation Act, prior to the approval of any Federal undertaking which may directly and adversely affect any National Historic Landmark, the head of the

Policy Act did not repeal these laws, and thus they must be "read together," not as a new mandate for "single use" rather than multiple use. Once again, BLM seems to mostly be interested in scoring cheap debating points here rather than fully considering the possibilities for using paced development as a means to protect the natural environment on the Pinedale Anticline. Again, the BLM's authority and obligations to consider paced development will be considered in considerably more detail below.

In conclusion, BLM failed to consider a reasonable range of alternatives in the SEIS because it: (1) effectively considered only two alternatives that differ only minimally from each other, and (2) improperly excluded alternatives from detailed consideration that could lead to greater conservation of natural and environmental resources and values on the Pinedale Anticline. At a minimum, to meet its obligations under NEPA, BLM must consider a conservation alternative in the SEIS, and elements of such an alternative are considered next.

BLM Must Consider A Conservation Alternative Prior To Approving Further Development On The Pinedale Anticline

Law And Policy Allow And Require BLM To Consider A Conservation Alternative

There is no question that BLM is legally empowered and in fact obligated to consider a conservation alternative in the SEIS. The NEPA itself establishes important national policies for environmental protection and Congress "directs that, to the fullest extent possible . . . the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in [NEPA]." 42 U.S.C. § 4332(1). See also id. § 4331 (presenting the environmental protection policies of NEPA). The CEQ regulations reinforce this obligation to protect the natural environment. See, e.g., 40 C.F.R. §§ 1500.2(f) (Federal agencies "shall to the fullest extent possible . . . use all practicable means . . . 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"); 1502.1 ("The primary purpose of an [EIS] is to serve as an action-forcing device to insure that the policies and goals defined in the Act are infused into the ongoing programs and actions of the Federal Government").

In addition to NEPA, the Federal Land Policy Management Act (FLPMA), BLM's organic law relative to its mission and purpose, establishes a requirement to consider a conservation alternative. "[I]t is the policy of the United States that—the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; . . . that will provide food and habitat for fish and wildlife and domestic animals . . . ." 43 U.S.C. § 1701(a)(8). BLM is required to manage the public lands under a multiple use mandate, which requires among other things the "harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the

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responsible Federal agency shall, to the maximum extent possible, undertake such planning and actions as maybe necessary to minimize harm to such landmark . . . ." 16 U.S.C. 470h-2(f). NEPA establishes numerous environmental protection policies for this country. See 42 U.S.C. §§ 4331(a) and (b). See also 40 C.F.R. §§ 1500.2, 1501.1, 1502.1. This is a small sampling of the numerous environmental protection statutes BLM operates under.

environment . . . ." Id. § 1702(c). And last, "[i]n managing the pubic lands the Secretary [of the Interior] shall, by regulation or otherwise, take any action necessary to prevent unnecessary or undue degradation of the [public] lands." 43 U.S.C. § 1732(b).

With respect to this last requirement it is probably important to emphasize to BLM that FLPMA establishes that the requirement to prevent unnecessary or undue degradation imposes dual requirements on BLM, it must prevent both unnecessary degradation as well as undue degradation. Mineral Policy Center v. Norton, 292 F.Supp.2d 30, 42 (D.D.C. 2003). We would also note that this decision stands as the final word as to what this term means—the Department of the Interior did not appeal this decision, and thus it is the final word of the court. Addressing this dual requirement, the court made plain that "Congress's intent was clear: Interior is to prevent, not only unnecessary degradation, but also degradation that, while necessary to mining, is undue or excessive." Id. That is, while unnecessary degradation may only prevent activities that are not generally recognized or used to pursue mining operations, the undue degradation prohibition establishes a further requirement to prevent activities that would unduly harm or degrade the public land. As stated by the court, "FLPMA, by its plain terms, vests the Secretary of the Interior with the authority—and indeed the obligation—to disapprove of an otherwise permissible mining operation because the operation, though necessary for mining, would unduly harm or degrade the public land." Id.

As noted above, in footnote 14, a host of other laws impose a requirement on BLM to consider environmental conservation as a key component of natural gas development on the Pinedale Anticline. Thus, it is clear that BLM is under an obligation to consider a conservation alternative in the SEIS. And it is also clear that no such alternative currently exists in the SEIS. As discussed above, BLM specifically rejected detailed consideration of a conservation alternative, and the alternatives it does consider would all lead to further massive environmental degradation in this area, particularly the operator's proposed action (Alternative B) and BLM's preferred alternative (Alternative C).

In addition to the legal obligations noted above, a host of BLM policies, regulations, and contractual provisions relative to oil and gas development allow and in fact demand consideration of a conservation alternative. Quite simply, BLM has retained very substantial rights to condition development so as to protect the natural environment even though it has leased lands for oil and gas development. BLM's standard lease form (form 3100-11) contains the following reservations of authority to BLM:

- Lease Terms Section 4: "Lessor reserves the right to specify rates of development and production in the public interest . . . ."
- Lease Terms Section 6: "Lessee must conduct operations in a manner that minimizes adverse impacts to the land, air, water, to cultural, biological, visual, and other resources . . . . Lessee must 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."

- Lease Terms Section 7: "To the extent that impacts from mining operations would be substantially different or greater than those associated with normal drilling operations, lessor reserves the right to deny approval of operations."

Clearly BLM has retained very substantial retained rights under the standard lease, and under those retained rights BLM has more than adequate authority to ensure that it fully complies with the laws and policies noted above via consideration of a conservation alternative.

BLM sometimes invokes its regulation at 43 C.F.R. § 3101.1-2 as imposing limits on its ability to condition development, claiming that (in the absence of a stipulation or non-discretionary statute) it can only impose "reasonable measures" demanding no more than that lease operations be moved no more than 200 meters, leasehold operations be prohibited by no more than 60 days, or that operations be moved off the leasehold. This is a misapprehension of this regulation. In adopting this regulation, BLM commented that "the authority of the Bureau to prescribe 'reasonable,' but more stringent, protection measures is not affected by the final rulemaking." Oil and Gas Leasing, Geothermal Resources Leasing, 53 Fed. Reg. 17,340, 17,341 (May 16, 1998). Quite simply, this regulation establishes a floor, not a ceiling. Furthermore, as noted above, the specific terms of the standard lease certainly do not limit BLM's authority to this degree. It may be worth noting that the standard lease form and the regulation were both adopted in 1988; BLM certainly developed one in full recognition of the other. Consequently, the standard lease and the 3101.1-2 regulation must be considered together to determine BLM's retained rights. The 3101.1-2 regulation does not stand as the sole word as to what constitutes "reasonable measures," and in any event it too is highly permissive (reasonable measures "are not limited to" modifying siting or design of facilities, timing of operations, and specification of reclamation, and the specific reasonable measures are "at a minimum" of what is within BLM's authority).

In this regard it may be worth noting what rights BLM conveys when it issues a lease and what rights it has retained. BLM only conveys three limited rights when it issues a lease:

- An "exclusive right" to remove all of the oil and gas on the leasehold. Form 3100-11.
- The right to "use" as much of the leasehold as "necessary" to recover all of the leased resource. 43 C.F.R. 3101.1-2.
- The right to build and maintain "necessary" improvements. Form 3100-11.

Thus, the only rights the operators have are a right to exclude others from developing the lease, to use no more of the lease than is "necessary" to retrieve the leased oil and gas, and a right to build only "necessary" improvements. The operators have certainly not been conveyed a right to develop the oil and gas as they desire or on exactly the timeline they desire. In contrast to the limited rights that have been conveyed, under the standard lease form and the 3101.1-2 regulation, BLM has specifically retained the right to condition development based on the following:

- Applicable laws.
- Terms, conditions, and stipulations in the lease.
- Regulations and formal orders in effect when lease issued.

- Regulations and orders issued afterward, if not inconsistent with lease rights and provisions in the lease.
- Specific, non-discretionary statutes.
- Reasonable measures.

The limited conveyance of rights under a federal oil and gas lease and the government's high degree of retained authority to condition development on leases was long ago recognized by the Supreme Court:

> Unlike a land patent, which divests the Government of title, Congress under the Mineral Leasing Act has not only reserved to the United States the fee interest in the leased land, but has also subjected the lease to exacting restrictions and continuing supervision by the Secretary. . . . . In short, a mineral lease does not give the lessee anything approaching the full ownership of a fee patentee, nor does it convey an unencumbered estate in the minerals.

Boesche v. Udall, 373 U.S. 472, 477-78 (1963). In addition, the court stated that "Recognition of the Secretary's power here serves to protect the public interest in the administration of the public domain." Id. at 484. Clearly, BLM has more than sufficient authority to pursue a conservation alternative in order to meet its legal obligations under numerous environmental laws and policies.[15]

In addition to the provisions in the standard lease form, the Mineral Leasing Act itself and BLM's regulations relative to the conditions under which oil and gas development may be pursued are replete with retained authority to condition development of a lease, and indeed a responsibility to do so in order to protect the natural environment. "Each lease shall contain provisions for the purpose of insuring the exercise of reasonable diligence, skill, and care in the operation of said property . . . ." 30 U.S.C. §187 (emphasis added). "The Secretary of the Interior is authorized to prescribe necessary and proper rules and regulations and to do any and all things necessary to carry out the and accomplish the purposes of this chapter, also to fix and determine the boundary lines of any structure, or oil and gas field . . . ." Id. § 189. "The Secretary of the Interior, for the purpose of encouraging the greatest ultimate recovery of [leasable minerals], and in the interest of conservation of natural resources, is authorized to waive, suspend, or reduce the rental, or minimum royalty, or reduce the royalty on the entire leasehold . . . ." Id. § 209 (emphasis added). "The Secretary of the Interior, or for National Forest lands, the Secretary of Agriculture, shall regulate all surface disturbing activities conducted pursuant to any lease issued under this chapter, and shall determine reclamation and other actions as required in the interest of conservation of surface resources." Id. § 226(g) (emphasis added) (also requiring approval of a plan of operations and "complete and timely" reclamation and restoration of lease tracts).

[15] BLM sometimes attempt to invoke BLM Instruction Memorandum (IM) 92-67, December 3, 1991 as limiting its ability to condition development on lease. But this IM is of no moment. For one it expired on September 30, 1992. Moreover, it is totally inconsistent with the decision in Mineral Policy Center v. Norton (discussed above), a decision that BLM did not challenge and which stands as the final authority as to what BLM's obligations are under the FLPMA unnecessary or undue degradation clause. A BLM IM, of course, cannot stand in the way of a U.S. District Court decision, especially one from the District of Columbia where BLM is headquartered.

Clearly the Mineral Leasing Act gives BLM broad authority to condition oil and gas development in the interest of conservation, and this authority has been recognized by the courts. Copper Valley Machine Works, Inc. v. Andrus, 653 F.2d 595 (D.C. Cir. 1981) (determining that the "ordinary meaning" of the term "in the interest of conservation" in section 209 of the Mineral Leasing Act allows suspension of operations so as to protect the environment); Getty Oil Co. v. Clark, 614 F.Supp. 904 (D. Wyo. 1985) (holding sections 189 and 209 of the Mineral Leasing Act provide broad grants of authority allowing conditioning of development to protect the environment, even allowing denial of drilling operations to protect wilderness values when a suspension is requested by the lessee; also determining that NEPA imposes responsibility to consider environmental values in carrying out the Mineral Leasing Act).

As noted, BLM regulations regarding the conditions under which oil and gas development can occur are also replete with provisions granting authority to pursue consideration of a conservation alternative in the SEIS. "The authorized officer is authorized and directed to ". . . require compliance with lease terms, with the regulations in this title and all other applicable regulations promulgated under the cited laws, and to require that all operations be conducted in a manner which protects other natural resources and the environmental quality . . . ." 43 C.F.R. § 3161.2. "Before approving operations on a leasehold, the authorized officer shall determine . . . that the proposed plan of operations is sound both from a technical and environmental standpoint." Id. "All operations will be conducted in a manner "which protects other natural resources and environmental quality . . . ." Id. § 3162.1(a) (also requiring the operating rights owner to comply with all applicable laws, regulations, lease terms, Onshore Oil and Gas Orders, Notices to Lessees, "and with other orders and instructions of the authorized officer"). "The operator shall conduct operations in a manner which protects the mineral resources, other natural resources, and environmental quality." Id. § 3162.5-1(a) (also requiring compliance with orders, applicable laws, regulations, lease terms and the drilling/operations plan). "The operator shall exercise due care and diligence to assure that leasehold operations do not result in undue damage to surface or subsurface resources or surface improvements." Id. § 3162.5-1(b).

And as also noted above, section 4 of the standard lease form clearly allows BLM to regulate the pace of development. This authority is bolstered by many other provisions of law and policy noted above, and the courts have recognized that BLM has an obligation to consider regulating the pace of development in a NEPA analysis. In Northern Plains Resource Council v. BLM, No. CV 03-69-BLG-RWA (D. Mont. February 25, 2005) and Northern Cheyenne Tribe v. BLM, No. CV 03-78-BLG-RWA (D. Mont. February 25, 2005) the court held that BLM violated NEPA by not considering alternatives for phased development in the context of a coalbed methane development project.

BLM itself has also recognized the need to consider phased development alternatives, including as a component of development on the Pinedale Anticline. In the PAPA DEIS BLM acknowledged that, "BLM can regulate the manner and pace of development" and that pursuant to Interior Board of Land Appeals decisions, "consider[ing] staggering development over time [is] an "*obvious* alternative."" PAPA DEIS at 2-43 (citing Wyoming Outdoor Council, 147 IBLA 105 (1998) and Powder River Basin Resource Council, 120 IBLA 47 (1991)). See also

PAPA DEIS at 2-2 (paced development is consistent with lease rights granted and required to meet the requirement to prevent unnecessary or undue degradation). A phased development approach was recently proposed in the Seminoe Road Draft EIS for oil and gas development in the Rawlins area.

We engage in this lengthy and somewhat detailed review of relevant law and policy so as to emphasize that the BLM certainly has the authority to consider a conservation alternative in the SEIS, and moreover, has a legal obligation to do so. We would like to emphasize again that the no action alternative certainly cannot be deemed a conservation alternative. As discussed in detail in the first section of these comments, this "resource protection" alternative simply has not proven to be so. As the SEIS makes clear, severe environmental degradation has already occurred under this alternative, and greater environmental damage would occur with its continued implementation. Thus, the no action alternative is not a "conservation alternative, and a true conservation alternative must be identified and evaluated in the SEIS.

This review of BLM's law and policy relative to oil and gas development also emphasizes that the reasons offered by BLM for not considering a conservation alternative or a reduced pace of development alternative in the SEIS, SEIS at 2-38 to -40, are simply unavailing and in fact without legal basis, as was discussed in more detail above. For one, any policies established by the Energy Policy Act of 2005 cannot be deemed as the sole authority that BLM must consider and be guided by when it pursues oil and gas development. Any guidance to increase the rate of oil and gas development found in the Energy Policy Act must be read in the context of this other existing massive body of law and policy, none of which was repealed by the Energy Policy Act, explicitly or implicitly. Rather than engaging in an effort to disparage or debunk possible elements of a conservation alternative or a paced rate of development alternative, under the law and policy discussed above BLM must in fact actively seek to identify and then implement elements of a conservation alternative, some of the elements of which are discussed next.

Elements Of The Needed Conservation Alternative

Confine Development to the Core Area

Under either alternative B or C development would be focused in a "core area;" however, there is no guarantee that development would in fact be limited to this high-natural-gas-potential area along the Pinedale Anticline crest. Development could spread out from the crest and potentially be quite intensive in the "flank" or "peripheral" areas outside the core area; the SEIS would not preclude this.[16] This needs to be corrected and an alternative needs to be considered that would clearly prevent development in the flank areas until development in the core area has been fully achieved and the disturbance reclaimed.

One obvious mechanism to achieve this is to suspend leases outside of the core area. As discussed above, BLM has the authority to suspend leases in the interest of conservation, and using this mechanism to protect natural resources has been approved by the courts. Certainly at a minimum, leases held by Shell, Ultra, and Questar that are held outside the core area could be

[16] See SEIS at 2-25, 2-30 (allowing for drilling outside of the core area).

suspended; these companies will have tremendous opportunities to develop their leases in the core area and there can be little doubt they will reap tremendous benefits from doing so. Quite simply there is no reason they cannot be required to wait to develop their leases that are outside the core area. We would note that lease suspension is a mechanism that BLM is well aware of, having used it to protect natural resource values in the nearby Jack Morrow Hills area in recent years. It has also been used in the Otero Mesa area in New Mexico and the Rocky Mountain Front Area in Montana. It is being proposed for use on the Roan Plateau in Colorado. BLM should consider all of these models as means by which lease suspension might be pursued in the peripheral areas of the Pinedale Anticline.

Another mechanism that could be available to protect the flank areas would be to require unitization of leases. This would allow all lease holders to enjoy the benefits of development of leases in the core area, while protecting the flank areas from development. While there may be some limits on the ability to require unitization, BLM could certainly urge operators to enter into voluntary unitization agreements and use other mechanism (pooling orders) to pursue unified development on the Pinedale Anticline. Unitization is a key component of the means by which development would be allowed on the Roan Plateau in Colorado in an effort to also protect the natural environment, and BLM should thoroughly consider that model.

There are likely other mechanisms available to protect the flank areas. For one, BLM could commit to not offering any unleased areas for sale in the future. There are rather extensive areas on the west and southwest side of the Pinedale Anticline that have not been leased, and many of these areas have overlapping crucial wildlife habitats. Exhibit 5. We urge BLM to consider and in fact adopt an alternative that would not allow these areas to be leased as a mechanism to ensure the flank areas of the Pinedale Anticline receive long-term protection while the core area undergoes development.

Another option for ensuring the flank areas receive protection from drilling might be to consider extending the core area further south. This would allow many of the leases held by other operators (Yates, BP, and others such as Stone) to be subject to provisions allowing development of their leases in the core area, making it more viable to suspend their leases outside the core area. As with the current leases subject to the Development Area 5 provisions, this extended core area would likely need to continue to be subject to stipulations for the protection of sage grouse, even in the core area. See SEIS at 2-36 (presenting development requirements for DA-5). As for Anschutz and its holdings on the northeast periphery of the Pinedale Anticline, BLM can and should promote and facilitate buyout and exchange of leases with other operators as one option to lease suspension.

Last, as one component of protecting the flank areas, BLM should consider carrying forward the current Management Area designations found in PAPA ROD relative to these flank areas (i.e., areas outside the core area). This would allow an enhanced degree of protection for resources in these flank areas, and set limits on the amount of development that would be permissible, which currently seems to be lacking, especially under Alternative C, BLM's preferred alternative. See SEIS at 2-30 (limiting development in the flank area only to compliance with the seasonal timing limitation stipulations).

Phased Development Must Be Analyzed And Should Be Required

The legal authority and obligations that BLM operates under that require phased development to at least be analyzed and if needed required were discussed in detail above. The standard lease form specifically gives BLM this right, courts have required BLM to consider phased development alternatives, and the PAPA DEIS and ROD recognized this "obvious" authority and duty relative to the Pinedale Anticline. See also National Wildlife Fed'n et al., 169 IBLA 146, 164 (2006) (agreeing 43 C.F.R. §§ 3162.1(a) and 3101.1-2 "vest [BLM] with adequate authority to protect wildlife values" even relative to a 1948 lease, and that this authority is bolstered by the provisions in section 4 of the standard lease form that allows BLM to specify the rate of development).

Lessees have no legal right whatsoever to dictate the pace of development; the only legal rights they have are to exclude others from attempting to develop their leases and to use so much of the lease as "necessary" to develop the oil and gas with the attendant right to build "necessary" structures. They have no other rights, and thus any concerns they have to the contrary cannot dictate whether phased development is considered and even required. There simply can be no doubt that BLM has the authority to require that development occur at a carefully paced rate that considers the needs and impacts to other resources. And under obligations such as the requirement to prevent unnecessary or undue degradation, there can be little doubt that BLM is required to pursue this approach if such would prevent undue environmental impacts. As noted in the Mineral Policy Center decision, under 43 U.S.C. § 1732(b), the BLM has an obligation to do whatever is required to prevent undue or excessive impacts that degrade the public lands. 292 F.Supp.2d at 42.

Here there can be little doubt that pursuing full-tilt, high speed development, as would be allowed under both Alternatives B and C, would lead to massive environmental impacts. The magnitude of these extreme impacts was discussed in detail in the first section of these comments. BLM has an obligation under the numerous policies and legal authorities cited above to seek ways to prevent such impacts, or at least reduce their intensity and magnitude.[17]

While under Alternatives B and C liquid gathering systems would be employed and could reduce impacts by reducing traffic and human activity levels, any benefit from this reduction in human activity might be years away. As noted in the SEIS relative to mule deer, "Under the Proposed Action Alternative and Alternative C through 2011, winter traffic would increase above existing levels with year-round drilling. Even though both of these alternatives would have a liquid gathering system and the No Action Alternative would not, winter traffic would still be increased over the levels of the No Action Alternative due to the increase in traffic related to drilling and completions." SEIS at 4-132. In any event, BLM makes no pretense that Alternatives B and C are paced development alternatives, and as discussed above the No Acton Alternative cannot be viewed as a paced development alternative because at most it could only be implemented for a few more years.

[17] We would note that in the Draft RMP for the Little Snake Field Office in Colorado, the BLM recognizes that the impacts of development are affected by the pace of development. See http://www.co.blm.gov/lsra/rmp/documents/07_LSDEIS_Chapter_4_SFS.pdf at page 4- 240.

Quite simply, what is proposed under either Alternatives B or C is a massive increase in the pace and rate of disturbance. Intense development would occur through 2023. Approximately 1,453 additional wells would be drilled by 2011 and 4,399 wells would be drilled by 2023. Up to 48 drill rigs would be in operation. Up to 305 wells would be drilled per year. Two-hundred-fifty new well pads will be developed and the total number of well pads will reach 598. Well pads could be up to 21 acres in size. Initial surface disturbance will exceed 12,000 acres.

There can be little doubt that regulating the pace of development would be one means to reduce the impacts created by this onslaught. Certainly impacts to air quality could be directly and positively reduced using a paced form of development. Given that BLM states that it will allow the violation of legally binding limits on increased pollution in Class II areas (violation of "Class II increments") and the violation of the national goal of preventing any degradation of visibility in Class I areas such as the Bridger Wilderness Area and Grand Teton National Park if either Alternatives B or C are pursued, it is obligated to fully consider reducing the pace of development so as to prevent this impact.

If the pace of development were reduced, impacts to big game and sage grouse might also be greatly reduced. Hall Sawyer's and Matt Holloran's studies have convincingly documented the impacts that the current almost unchecked pace of development is having on wildlife on the Pinedale Anticline. Maintaining or even increasing that pace of development can only increase the impacts. As note by Hall Sawyer in the 2005 Annual Report, "Reducing disturbance to wintering mule deer may require restrictions or approaches that minimize the level of human activity during both production and development phases of wells." Sawyer 2005 at 48. The expert comments of Drs. Braun and Alldredge, Exhibits 2 and 3, add weight to the need to regulate the pace of development so as to protect wildlife.

To meet its legal obligations BLM must consider means to spread these impacts out over time so that they are not so intense. BLM must regulate the pace of development so that areas are first drilled and then reclaimed before allowing development to spread into other areas. BLM should regulate development to a pace that ensures the thresholds that will be discussed in the next section are not exceeded.

At times BLM argues that fast-paced development is better than paced development. It essentially argues that a binge does less damage than moderation. Before this argument can be given credence BLM needs to come forward with data or science to support this assertion. What is known with certainty is that the current pace of development is causing a number of extreme environmental impacts and that when BLM increases the pace of development under Alternatives B and C the impacts will get considerably worse. Thus, there is no support for a claim that high-paced development is environmentally preferable.

Yet with a slower pace of development there is no doubt that air quality impacts will be reduced, and the studies of Holloran and Sawyer make it apparent that big game and sage grouse would benefit from a slower rate of development as well. And we would note that the operators' business concerns (like ensuring long-term access to drill rigs) are not in any way a component of the rights BLM has conveyed through leases, or a component of any law or policy that we are

aware of. While BLM can and should consider these concerns, they are in no sense binding on BLM. And it is not even certain that a massive influx in development will lead to a more stable or desirable socio-economic situation, as discussed in Appendix 1. See also SEIS at 4-16 to -22. In fact, statistics in the Sublette County Socio-Economic Analysis show that accelerated development has severe socio-economic impacts. This report states that, "housing shortages and cost of living pressures currently insure that nearly none but the highest-paid workers will permanently relocate to fill the vital jobs needed for a stable economy. Furthermore, the mostly non-resident workforce is causing indicators as diverse as traffic accidents, arrests, and library patronage to quadruple in the last 5 years, and local services (both government and private) are struggling to keep up with demand." See www.sublette-se.org/files/long_impact_summary.pdf. So, again, it is incumbent on BLM to come forward with objective evidence in support of any claims that maximizing the rate of development is somehow better than, or "not so bad," relative to carefully regulating the pace of development.

It is also worth noting that BLM is pursuing paced development on many other lands that it manages. On the Roan Plateau in Colorado, phased development would be achieved through sequencing the exploration and development operations conducted within six geographic areas, referred to as phased development areas. These six areas would be defined by the tops of ridges between the major drainages atop the plateau. Drilling and production would be allowed in only one geographic area at a time. On the Otero Mesa in New Mexico, BLM has required that surface disturbance be limited to 5 percent of lease acreage at any one time, such that successful reclamation is required prior to additional development. And in Wyoming, BLM is implementing paced development as a component of the Jack Morrow Hills Activity Plan. Record of Decision and Jack Morrow Hills Coordinated Activity Plan/Green River Resource Management Plan Amendment at 8-10, 54. Given this widespread recognition of the utility of paced development as an appropriate way to manage and regulate oil and gas development, there is no reason that development activities on the Pinedale Anticline should not be subject to similar requirements.

There Must Be Thresholds for Adaptive Management

Another component of a conservation alternative that should be considered in the SEIS is the definition and establishment of thresholds that will precipitate adaptive management actions (mitigation) should the thresholds be exceeded. At a minimum these thresholds should be adopted relative to impacts on pronghorn, mule deer, sage grouse, and air quality.

As currently formulated, Alternative C does not contain specific, measurable markers or thresholds that would precipitate action by BLM, nor is there a definition of what such action might include. Rather, the development would be allowed to proceed at the maximum rate desired by the operators regardless of its impacts, so long as drilling was done in the manner prescribed on pages 2-33 to 2-36 of the SEIS, and operations were performed in accordance with the "performance based objectives" in Appendix E.[18] Alternative B is no different—there would

[18] BLM indicates that operations, even under Alternative C, would also be subject to the Development Procedures presented in Appendix C. SEIS at 2-29. But utilization of these measures under Alternative C receives only this one passing mention, so it is far from clear that the provisions in Appendix C would be applied. In any event, the provisions in Appendix C do no establish thresholds that would trigger specific management actions.

be no potential checks on or modifications to development regardless of its impacts so long as drilling occurred under the provisions on pages 2-23 and 2-25 of the SEIS, and Appendix C was complied with.

This lack of provisions for ensuring there is ongoing monitoring of impacts to key resources and provisions specified for mid-course corrections so as to ensure the impacts are kept to acceptable, specified levels is unacceptable. Alternatives considered in an EIS shall "Include appropriate mitigation measures not already included in the proposed action or alternatives." 40 C.F.R. § 1502.14(f). Certainly specifying thresholds that will trigger a management response is an "appropriate" mitigation measure. As will be discussed below, environmental values in the Pinedale Anticline are very high, so BLM has a duty to seek to maximize mitigation protections. And as discussed above, neither Alternative B or C currently contains thresholds. In addition, in considering the environmental consequences of a project, BLM must discuss "Means to mitigate adverse environmental impacts" that have not been fully covered in the Alternatives section of an EIS. Id. at § 1502.16(h). Again, this clearly shows that it is appropriate and needed for BLM to consider thresholds as a means of mitigating the impacts of the Pinedale Anticline project. As BLM is aware, the CEQ regulations establish that the mitigation of impacts that must be considered in an EIS includes, but is not limited to, avoiding the impact altogether, minimizing the impact, rectifying the impact, reducing or eliminating the impact, and compensating for the impact. Id. § 1508.20. It is difficult to see how BLM can fully consider or provide for mitigation as defined in the CEQ regulations unless it establishes benchmarks that are deemed to require a management response; absent such it is difficult to see how BLM can effectively minimize impacts, rectify impacts, or reduce or eliminate impacts, as required by the CEQ regulations.

There can be little doubt that the Pinedale Anticline demands the utmost in mitigation efforts, including the establishment of thresholds that will precipitate defined management actions. The establishment of the 9 special Management Areas in the PAPA ROD demonstrates the high degree of importance of this area relative to a number of resources. The presence of a number of Class I areas devoted to protection of air quality at pristine levels in the vicinity of the Pinedale Anticline (especially the immediately adjacent Bridger Wilderness Area) is further evidence of the value of this area. The studies done by WEST, Inc. and the Wildlife Conservation Society have shown the extremely high value of this area to massive herds of mule deer and pronghorn, and the interconnection of winter ranges in this area with other seasonal habitats for these species throughout western Wyoming. As noted in the first section of these comments, BLM has previously recognized the Pinedale Anticline "contains some very unique natural resources."

We are not in a position to specifically define the needed thresholds in a numerical sense. We believe, however, this is primarily BLM's responsibility, working together with other expert agencies such as the Wyoming Game and Fish Department and the Wyoming Department of Environmental Quality. But we can suggest the following as being relevant to the establishment of thresholds. With respect to air quality the SEIS makes it plain that BLM anticipates it will violate the law relative to increased pollution levels (increments) in Class II areas and violate national policy relative to maintaining pristine visibility in Class I areas. BLM cannot allow for this to occur. 43 U.S.C. § 1712(c)(8) (BLM must "provide for compliance" with air pollution

laws, regulations, and standards); 43 C.F.R. § 2920.7(b)(3) (land use authorizations must "require compliance" with air quality standards). Consequently, BLM should provide that determinations be made on an ongoing basis as to whether any air quality limitation is being exceeded, and if it is exceeded specify steps that will be taken that are sufficient to prevent exceedance of the limitation.

With respect to mule deer, pronghorn, and sage grouse, at a minimum BLM should determine thresholds for these species' populations and/or essential habitats that ensure their long-term viability on the Pinedale Anticline. These thresholds could be framed in terms of minimum population numbers that will not be crossed, or perhaps based on other ecological measures of population or habitat status that could be determined in consultation with the Wyoming Game and Fish Department. With respect to sage grouse, we would note that this species is a sensitive species under BLM policy. Under BLM's Special Status Species Management Manual BLM "shall ensure that actions authorized, funded, or carried out by the BLM do not contribute to the need for the species to become listed." Special Status Species Management Manual § 6840.06(E) (the minimum protection to be afforded to sensitive species is that required for candidate species), 6840.06(C) (provisions for candidate species). See also Bureau of Land Management National Sage-Grouse Habitat Conservation Strategy (establishing policies to engage in ongoing monitoring and protection of sage grouse habitats). With respect to sage grouse, thresholds that ensure the continued viability of sage grouse on the Pinedale Anticline are the minimum that BLM must ensure; in addition the thresholds should serve as assurance that BLM is not engaging in actions that "contribute" toward a need to list the species.

The significance of the mule deer and pronghorn populations that utilize the Pinedale Anticline is beyond dispute. "Western Wyoming is home to the largest, most diverse ungulate populations in the Rocky Mountain region." Sawyer 2005 at 3. And, "the PAPA encompasses the Mesa, which is used by thousands of mule deer, pronghorn, and sage grouse . . . ." Id. Given this significance, BLM should establish thresholds that ensure the long-term viability of these magnificent herds on the Pinedale Anticline, both because they "are primary concerns among the public and state and federal agencies" and because of their "large . . . economic importance" in western Wyoming. Id. We would note that the appropriate threshold is viability on the Pinedale Anticline; that the Sublette Mule Deer Herd as a whole might remain viable is not the question at issue here, the relevant question is will the direct and indirect effects of the Pinedale Anticline oil and gas development project reduce big game herds in this area to the point they are no longer viable. That should be the basis for thresholds relative to mule deer and pronghorn. As noted in Dr. Alldredge's comments, Exhibit 3, the Pinedale Anticline population of mule deer is distinct from the overall Sublette Herd.

Last, we would note that while thresholds should trigger responses that ensure that the viability of species on the Pinedale Anticline is not lost, or that legal limits are not exceeded, this does not necessarily mean that development on the Pinedale Anticline would be "stopped." It might be slowed up, it might be temporarily halted in certain areas for a period of time, but this does not mean it is "stopped." As discussed above, BLM can and should require a paced form of development, and it would certainly be appropriate to tie the pace of development to the thresholds mentioned here. That is, the pace of development would be slowed if thresholds were exceeded, but this is not the same thing as "stopping" development or depriving lease holders of

their rights. BLM has more than adequate authority, and in fact a legal responsibility, to ensure that the pace of development does not cause specified environmental thresholds to be crossed.

Offsite Mitigation

Offsite mitigation is mentioned to a very limited degrees in the SEIS, mostly or entirely in relation to the operators' proposed action (Alternative B). SEIS at v. It is not clear that offsite mitigation would be a component of Alternative C; it appears it would not be.

We believe it is crucial for BLM to adopt specific provisions for offsite mitigation as a component of a conservation alternative. Given the massive impacts that are likely on the Pinedale Anticline, it would appear that it will be crucial to try to protect habitat outside of the Pinedale Anticline from future development so that these areas, at least, will have a likelihood of being able to maintain ecological functioning condition. In this regard, it may be necessary to put in place an entity akin to the Jonah Interagency Mitigation and Reclamation Office in order to manage and ensure off-site mitigation. Provisions for dedicated administration and oversight of offsite mitigation are crucial. It also crucial that there be adequate funding for offsite mitigation, and BLM should require or negotiate such funding from the operators on the Pinedale Anticline field, as has occurred in the Jonah Field. Absent such provisions and assurance, "offsite mitigation" may be little more than a promise.

We also believe the SEIS should make the following provisions relative to offsite mitigation. First, this mitigation must occur early, prior to development occurring or early in the development phase. Waiting to mitigate impacts until the full magnitude of the impact has been documented will only harm the effectiveness of offsite mitigation because over time there will be fewer and fewer desirable offsite mitigation opportunities. The time to mitigate impacts is when they occur, not at some point in the future.

We also believe that offsite mitigation must involve habitat <u>protection</u>, not "habitat improvement" or other less-than certain means of protecting wildlife and other resources. Too often BLM pursues "habitat improvement" such as burning sagebrush and other unproven techniques rather than pursuing proven techniques, namely the simple protection of habitat. Attached to these comments as Exhibit 6 is a letter sent to the BLM regarding the BLM's Wyoming Landscape Conservation Initiative. On pages 2-5 of this letter several of the reasons that pursuing "habitat improvements" in sagebrush habitats is problematic are discussed in detail (with citation to supporting scientific literature), and the authority and responsibility that BLM has to pursue habitat protection, much of which was also discussed above, is also discussed. We ask BLM to consider this information and to ensure that any offsite mitigation that is pursued as a component of a conservation alternative focuses on habitat protection and not "habitat improvement."

In a related matter, we would note that long-term protection of an area is much more difficult if an area has been leased. Consequently, BLM should identify off-site options for mitigation that are in unleased areas to the extent possible. And, alternatively, BLM should pursue exchange and/or buyout of leases if needed to ensure that offsite mitigation areas are in fact capable of being protected in the long-term. Areas that have not been leased in the Pinedale

Field Office which also have a high degree of importance for wildlife are shown in Exhibit 5, and we ask that BLM consider this map and use it as an aid for identifying priority areas for offsite mitigation. For example, large areas in the Ryegrass area and the Wind River Front might be good candidates for offsite mitigation because they are unleased.

BLM Should Adhere To Mitigation Measures In The Wyoming Game And Fish Department's Recommendations Policy

As BLM is aware, the Wyoming Game and Fish Department has developed "Recommendations for Development of Oil and Gas Resources within Crucial and Important Wildlife Habitats." (Recommendations Policy).[19] This policy provides for a number of important mitigation measures that would help reduce impacts to wildlife on the Pinedale Anticline in the face of massive oil and gas development. If BLM adopted these measures many of the severe impacts that would result from further development of the Pinedale Anticline—even with BLM's limitations on the timing and location of drilling under Alternative C—could be further reduced. These severe impacts were identified in detail in the first section of these comments, but fundamentally, development as currently planned raises significant questions as to whether viable or functional populations of pronghorn, mule deer, and sage grouse will continue to exist on the Pinedale Anticline in 2023 when development is complete. BLM is obligated to prevent impacts of this magnitude, and the Recommendations Policy provides a means to do so. Consequently BLM should commit to adhering to the mitigation measures in the Recommendations Policy.

BLM is obligated to abide by state policy unless it is contrary to federal policy. See, e.g., 43 U.S.C. § 1712(c)(9) (FLPMA provisions requiring adherence to state policy); 43 C.F.R. Part 24 (BLM regulations governing cooperative state-federal wildlife management). Moreover, the Memorandum of Understanding between BLM and the State allows and requires BLM to adhere to the Recommendations Policy. Given these sources of authority, not to mention the numerous lines of authority mentioned above, BLM should commit to adhering to the Recommendations Policy in the SEIS.

Categorical Exclusions And The Western Governors' Association Policy Resolution 07-01

A final element of a conservation alternative should include a commitment by BLM to not process future applications for permit to drill (APD) in the Pinedale Anticline pursuant to the categorical exclusion provisions available under the Energy Policy Act of 2005. 42 U.S.C. § 15942. Rather, full compliance with NEPA at the APD stage is needed to ensure the numerous and very severe impacts identified above continue to receive maximum environmental review and mitigation. Moreover, full compliance with NEPA at the APD stage will ensure decision-making is done in the sunlight, with opportunities for full public participation.

We would note that the Energy Policy Act does not mandate the use of these categorical exclusions, they are optional. The use of these categorical exclusions is subject to a rebuttable presumption. BLM should determine that the presumption has been rebutted with respect to

[19] See SEIS at 4-129 (acknowledging this policy but failing to provide any commitment to adopt its provisions or to abide by them, even partially).

development on the Pinedale Anticline. Given the numerous and severe impacts that will result under either Alternative B or C BLM would certainly be justified in concluding the presumption has been rebutted. The ROD in this matter should provide that the Energy Policy Act categorical exclusions will not be utilized on the Pinedale Anticline. Such is necessary to ensure maximum conservation of environmental values on the Pinedale Anticline.

We would note that on February 7, 2007, the Western Governors' Association, due in substantial part to the efforts of Wyoming Governor Dave Freudenthal, adopted a policy resolution that calls for BLM to place a moratorium at least on the use of the categorical exclusion provided by 42 U.S.C. § 15942(b)(3), a categorical exclusion which could apply to the Pinedale Anticline. Exhibit 7. Thus, in order to comply with the policies of the State of Wyoming, and a number of other states, BLM should commit to not using categorical exclusions from NEPA compliance at the APD stage on the Pinedale Anticline. As pointed out above, FLPMA requires BLM to abide by state policy that is not contrary to federal policy.

We would also note that the Western Governors' Association policy resolution calls for several other conservation measures that should be adopted to protect resources from the impacts of oil and gas development. Exhibit 7. BLM should consider adopting these policies as components of a conservation alternative for the Pinedale Anticline.

BLM MUST PROVIDE FOR ENFORCEABLE, CLEARLY DEFINED MITIGATION MEASURES

General Comments Regarding Mitigation Needs

The mitigation provided for in the SEIS is largely vague and not clearly enforceable. BLM must put in place mitigation that is clearly specified, adequately funded, and enforceable. Mitigation to reduce all significant impacts must be put in place and clear indication of funding amounts and sources be confirmed. In addition, it must be made clear where there are adequate amounts of contiguous wildlife habitat within the Upper Green River Valley at a ratio of 3:1, as Plan Proponents have indicated they will commit to: that is, for every one acre of habitat that is impacted, three acres of habitat should be assuredly protected or improved. These lands must be of similar or better habitat value as lands proposed for fragmentation or degradation, and they must contain value for the same wildlife species being impacted. Adequate monitoring to ensure that the mitigation is enforced must be specified. In this regard, annual monitoring reports and a predevelopment inventory should be required. Mitigation must be put in place from the inception of this massive infill project, not 3-5 years after it begins, as seems to be the case for some mitigation.

As noted above, mitigation is a key component of the NEPA process. Appropriate mitigation and means to mitigate adverse impacts must be evaluated. 40 C.F.R. §§ 1502.14(f), 1502.16(h). What "mitigation" means for purposes of NEPA is carefully defined, and includes 5 separate components that BLM must consider. Id. § 1508.20. The BLM must state in the EIS "whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not." Id. § 1505.2 § 1505.2(c). Given that the policy of the NEPA regulations is to "Use all practicable means . . . to restore and enhance

the quality of the human environment and avoid or minimize any possible adverse effects" and that the EIS "shall state how . . . it will or will not achieve the requirements of sections 101 and 102(1) of the Act and other environmental laws and policies," there can be little doubt that there must be a full discussion of potential mitigation, and that mitigation must in fact to specified and put in place to the maximum extent possible. Id. §§ 1500.2(f), 1502.2(d).

Despite these requirements, not to mention those of statutes such as the ESA and the National Historic Preservation Act, the discussion of and provision for mitigation in the SEIS is inadequate. BMPs would apparently be "incorporated" into APDs, but there is no definition of what exactly that means or what environmental impacts would be reduced, or any indication of how these BMPs would reduce impacts. The "Gold Book" provides only general guidance at best, and then only relative to a few impacts of concern. Gold Book at 38-40. Appendix E in the SEIS by its own terms does not provide for mitigation, it specifies "performance based objectives." Most of these "objectives" are vague and many resources of concern are not even addressed. Little or no provision is made for monitoring and enforcement of these provisions. As noted above, it is not clear that Appendix C would apply to anything other than Alternative B; in particular the transportation planning, reclamation, hazardous materials, and wildlife provisions may not apply. See SEIS at 2-29 (specifying that only the "development procedures for wellfield activities" portion of this Appendix applies to Alternative C). While the provisions related to when drilling can occur in the Core Area could be viewed as mitigation, any value in this regard is severely diminished by the fact that, as discussed above, there are few if any limits on potential development outside of the Core Area. The attempt to concentrate development in the core area while peripheral areas are protected and left intact could well be illusory if development proves to be significant outside the Core Area. The SEIS makes no provisions to guard against this, thus any "mitigation" due to the prescriptions for drilling in the Core Area may have little or no actual value. Air quality mitigation measures are even more vague. There is no indication of what specifically would constitute Phase I and Phase II mitigation, and no provisions made to monitor or enforce compliance with the stated goals. In fact, much of the mitigation may be put off to some undefined time in the future: "If the goal of 0 days over 1.0 dv of modeled visibility impairment at the Bridger Wilderness Area cannot be demonstrated, the Operators, BLM, EPA, and WDEQ would jointly agree to a mitigation plan that complies with the goal, using any and all available means." SEIS at 4-75.

These vague and potentially nonbinding provisions are insufficient to meet BLM's obligations under NEPA. This is especially true because the BLM has a history of not fulfilling its mitigation commitment on the Pinedale Anticline. In fact, BLM has prepared an internal report documenting the widespread failure to meet the commitments made in the PAPA ROD. Exhibit 8. This may be part of the reason the "resource protection" alternative in the PAPA ROD has not been so. It simply has not been fully implemented as contemplated in the PAPA ROD. In any event, given this history of not meeting its mitigation commitments specified in a ROD, BLM must ensure that the same is not repeated as the massively increased level of development permitted by the SEIS and the accompanying ROD are pursued. Exhibit 8 documents a pervasive failure by BLM to adhere to mitigation measures that it adopts.

To achieve the maximum possible mitigation of impacts from this project, as required by NEPA, BLM must consider and pursue the following as components of this project. As

discussed above, BLM must prohibit development in the peripheral areas outside the Core Area until the Core Area has been fully developed and reclaimed through clear and definitive provisions. In addition, the other provisions discussed above should be included as mitigation measures: phased development, establishment of impact thresholds that if exceeded trigger definitive action on the part of BLM, implementation of the Wyoming Game and Fish Department Recommendations Policy, and a commitment to not use the categorical exclusion provisions of the Energy Policy Act of 2005. The recommendations of Drs. Braun and Alldredge regarding sage grouse and big game species should be considered in the SEIS and implemented, as should the recommendations of Cindy Copeland and Megan Williams relative to air quality.

Air Quality Mitigation Needs

With respect to air quality, the following specific mitigation measures should also be considered in the SEIS and required in the ROD. Tier 2 technology on drill rigs should be implemented and required immediately so as to meet BLM's stated goal of 0 days of significant visibility impairment in the Bridger Wilderness Class I Area due to development on the Pinedale Anticline. If Tier 2 technology cannot be implemented immediately, BLM should use "any and all available means" to achieve this goal, including regulating the rate of drilling, i.e., phased development should be used. This mitigation should achieve at least an 80 percent reduction in emissions, as BLM will seek to do through its Phase II mitigation. But this degree of mitigation should be required immediately so as to prevent the 45-60 days per year of significant visibility impairment in the Bridger Wilderness that will result for approximately the next 4-5 years if BLM implements mitigation gradually, as it currently plans. Under the best of circumstances, even after Phase II mitigation is implemented, there will still be 10 days of significant impairment of visibility in the Bridger Wilderness, a level of impact that fails to meet BLM's stated goal of 0 days of impairment, so clearly BLM must require additional mitigation in the SEIS so as to avoid violating its own stated goal.

"Any and all available means," including regulating the rate of drilling, must also be used to prevent violations of Class II increments for NO_2 and PM_{10} emissions. BLM is prohibited under the Clean Air Act and implementing regulations and State law from allowing violations of these standards, even "for only a few years" until Phase II mitigation becomes implemented. If caps on emissions need to be set to ensure these legal violations do not occur, BLM must set such caps as a component of the "any and all available means" that it recognizes are within its authority.

Last with respect to air quality, we urge BLM to maintain the current language on page 4-75 of the SEIS which states that BLM will use "any and all available means" to ensure that visibility impairment in the Bridger Wilderness Area does not exceed 1.0 dv. While this statement should be clarified to make clear that these means will be used immediately, not five years from now if impairment is still occurring, this language is an important component of mitigation to protect air quality because it recognizes BLM's full authority relative to protecting air quality. These means include limiting the number of drill rigs that are active and setting caps on emissions, and BLM should specifically acknowledge this authority as a component of "any and all available means" available to protect air quality.

Reclamation

Reclamation will be an important part of mitigation so as to reduce the impacts of the Pinedale Anticline project. Appendix E in many respects is primarily devoted to making provisions in this regard. It is not clear to us, however, that these provisions address what we believe is a crucial need: restoration of the native shrub habitat. That is, in most circumstances restoration of functional sagebrush habitat should be required and ensured. Appendix E does not establish this requirement with assurance, and it should be rewritten so as to clearly establish a requirement for restoration of the native shrub habitat, if native shrubs occupied the site prior to disturbance. Without restoration of the native shrub (sagebrush) habitat it is unlikely that many of the environmental values of the Pinedale Anticline can be restored.

At least two recent BLM analyses establish what we believe are relevant provisions relative to reclamation, and we ask that BLM consider these in the SEIS. On Otero Mesa in New Mexico (The ROD is available at http://www.nm.blm.gov/lcfo/white_sands_rmpa_eis/docs/PRINTABLEROD-LCFO-FINAL_text.pdf) the BLM recognizes that reclamation has two purposes: "to *stabilize the surface* against the long-term effects of erosion" and "to return the site to a productive post-operations *use that reflects the pre-disturbance conditions*." ROD, p. 13. The reclamation standard, also set out at page 13, states:

> Reclamation will be considered successful when healthy, mature perennials are established with a composition and density that *closely approximates the surrounding vegetation* as prescribed by the BLM, and the reclamation area is free of noxious weeds. All operations are covered by a bond as required by 43 CFR 3104.1.

This ROD also sets out additional standards, such that:

> Revegetation success will be evaluated using performance-based standards. Parameters will include the percent basal cover of *mature approved species as compared to an adjacent undisturbed area*. Operators will be required to use *any means necessary* to achieve acceptable revegetation *including irrigation* if rainfall during the growing season proves insufficient.

The RMP for the Little Snake, Colorado Field Office also includes certain reclamation criteria that set out specific criteria and reclamation techniques that can be applied to the PAPA SEIS. The reclamation standards are set out in Appendix O (available at http://www.co.blm.gov/lsra/rmp/documents/AppO_LSDEIS_Surface_Reclamation.pdf). This RMP recognizes that

> Reclamation will ensure surface and subsurface stability, growth of a self-*regenerating permanent vegetative cover, and compatibility with post disturbance land use*. The vegetation will be diverse and of the same seasonal growth as adjoining vegetation.

The specific metrics provided are also instructive:

> The following definitions and measurements will be used to accomplish and determine if reclamation has been achieved:

- Permanent vegetative cover will be accomplished if the basal cover of perennial species, preferably native, adapted to the area, is at lease *90 percent of the basal cover of the undisturbed vegetation of adjoining land* or the potential basal cover as defined in the Natural Resource Conservation Service Ecological Site(s) for the area. In addition, some presence of a desirable woody species is required.
- *Appropriate diversity* will be accomplished if at least two perennial genera and three perennial species adapted to the area make up the basal cover of the reclaimed area in precipitation zones 13 inches or less and three perennial genera and four perennial species in precipitation zones greater than 13 inches. One species will not make up more than 50 percent of the perennial vegetation by basal cover.
- *Plant communities* that are self-regenerating and adapted to the area will be evident if the community is in good vigor, there is evidence of successful reproduction, and the species are those commonly used and accepted in the area.
- Surface stability will be accomplished if soil movement, as measured by deposits around obstacles, depths of truncated areas, and height of pedestalling is not greater than 0.3 of an inch and if erosion channels (rills, gullies, etc.) are less than 1 inch in depth and at intervals greater than 10 feet.

We would appreciate BLM's consideration of these reclamation standards from the Otero Mesa and Little Snake analyses that are excerpted above for application to the Pinedale Anticline.

Modification, Waiver, Or Exceptions To Lease Terms And Stipulations Must Abide By BLM Regulations And Onshore Order No. 1

Stipulations on a lease can only be waived or modified if the factors leading to inclusion of a stipulation on a lease have changed sufficiently such that the protection provided by the stipulation "is no longer justified" or "if proposed operations would not cause unacceptable impacts." 43 C.F.R. § 3101.1-4; 72 Fed. Reg. 10,308, 10,337 (Onshore Order No. 1 § XI, dealing with waiver, exception, and modification). Thus, BLM can only waive or modify a stipulation if it can make at least one of the two specified findings relative to the specific stipulations on a specific lease with respect to specific "proposed operations." These same factors apply to exceptions to a stipulation under the terms of Onshore Order No. 1.

BLM has nowhere provided information showing that the protections on a particular lease for a particular proposed operation are "no longer justified." Sometimes it is claimed that the West, Inc. studies provide support for abandonment of seasonal timing limitation stipulations. But in fact, all the WEST, Inc. studies have concluded is that, "the number of producing well pads and associated human activity may <u>negate</u> the potential effectiveness of timing restrictions on drilling activities . . . ." Sawyer 2005 at 48 (emphasis added). That is, the magnitude of development is simply overwhelming the potential effectiveness of these stipulations; there is no evidence they are "no longer justified." In fact, "Reducing disturbance to wintering mule deer may require restrictions or approaches that minimize the level of human activity during <u>both</u> production and development phases of wells." <u>Id.</u>

Similarly, as documented repeatedly throughout these comments, there is no evidence for waiving, modifying, or providing exceptions to lease stipulations because their absence "would

not cause unacceptable impacts." The level of impact in the absence of these stipulations would in fact cause extraordinary impacts, as shown explicitly by the BLM's analysis of the impacts of Alternatives B and C, which would proceed with "temporary relaxation" of stipulations in many areas.[20] Moreover, BLM can only make this finding for "proposed operations," not on some general basis, under the explicit provisions of the regulation and Onshore Order No. 1.

In addition to adjusting stipulations only based on one of the two recognized bases, the BLM must also provide a 30 day public review period prior to making any change to a stipulation. 43 C.F.R. § 3101.1-4; Onshore Order No. 1 § XI. There can be little doubt that making changes to stipulations on the Pinedale Anticline constitutes a "substantial" change. These stipulations were a core underpinning of the PAPA DEIS, FEIS, and ROD, and to modify them now—especially given the enormity of environmental impacts—would clearly be a substantial change demanding an opportunity for public review.

BLM SHOULD NOT APPROVE IMPLEMENTATION OF THE PREFERRED ALTERNATIVE ON THE PINEDALE ANTICLINE UNTIL THE PINEDALE RMP IS REVISED

BLM of course has released the draft Pinedale RMP for public review. It will be approving a revised RMP in the relatively near future. It is our view it would be inappropriate to approve massively increased development on the Pinedale Anticline pursuant to the admittedly out-of-date 1988 RMP when a revised RMP to guide land management in this area is so close at hand.

BLM must manage the public lands "in accordance" with an RMP. 43 U.S.C. § 1732(a). Yet here, there is no guarantee that will be the case if it approves the SEIS preferred alternative under the old RMP but then largely implements it under the new RMP. This seems unwise, counterproductive, and contrary to sound land management principles to us, and consequently we ask that BLM not finalize the SEIS until the new RMP is approved.

Thank you for considering these comments.

Sincerely,

Bruce Pendery,
Attorney at Law, Wyoming Outdoor Council
And on Behalf of the Above Organizations

[20] It is not clear whether a "temporary relaxation" constitutes an exception, modification, or waiver (these terms are defined in Onshore Order No. 1 § XI). Nevertheless, under BLM's regulation and Onshore Order No. 1, only waiver, exception, and modification are recognized means to adjust a stipulation. Thus, BLM should state which of these legally recognized categories it will use on the Pinedale Anticline. And in any event, BLM can only justify an adjustment to a stipulation based on a finding for a particular lease and a particular proposed operation that is recognized by the regulation or Onshore Order No. 1 (i.e., the stipulation is "no longer justified" or the "proposed operations would not cause unacceptable impacts").

Enclosures

cc: Governor Dave Freudenthal
John Cora, DEQ
Dave Finley, DEQ
Terry Cleveland, WGFD
Larry Svoboda, EPA

APPENDIX 1

Comments on Draft Supplemental Environmental Impact Statement for the Pinedale Anticline Project Area

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The Draft Supplemental Environmental Impact Statement (SEIS) for the Pinedale Anticline Project Area discusses the proposed long-term development of natural gas on 198,034 acres, consisting of 158,000 acres of federal land, 9,800 acres of State of Wyoming land, and 29,800 acres of privately owned land. The proposed action (alternative B) provides year-round drilling, completions, and production of up to 4,399 additional wells on up to 12,278 acres of new disturbance, including well pads, roads, pipelines, and other ancillary facilities within the PAPA. Alternative C consists of the same project components as Alternative B, but is spatially different. Alternative A is the no action alternative.

The following comments on the SEIS focus on the weaker parts of the socioeconomic analysis. My comments fall into three major themes. First, BLM has focused on the socioeconomic benefits possibly associated with Alternatives A and B but has largely ignored the likely socioeconomic costs. Second, has overemphasized the importance of the natural gas industry in the local economy and failed to consider the possibly adverse effects of accelerated natural gas development on important parts of the local economy. Third, BLM has discussed some of the adverse environmental consequences resulting from accelerated natural gas development, but has failed to translate these consequences into estimated economic costs.

I. After reviewing the SEIS, it is apparent that BLM has emphasized the economic benefits of natural gas development in the PAPA, but has failed to adequately address many of the economic costs likely associated with accelerated natural gas development and production, including the costs to local, county, and state governments.

The SEIS provides estimates of the tax revenues distributed to Sublette County from ad valorem and severance tax collections. In addition, the SEIS discusses a six-fold increase in Sublette County's assessed property valuation and Payment in Lieu of Taxes paid to state and county governments. However, there are large costs associated with natural gas development, and the associated increases in transient and residential population and industrial activity, and BLM fails to discuss these costs. Governments in the PAPA are currently struggling with updating, expanding, and repairing the public infrastructure and are already experiencing some of these costs. Recent expenditures include[ii]: 1) Pinedale Sewage Lagoon- A new ultraviolet sewage treatment facility has been built in 2006 in order to handle increased and anticipated waste. Total Cost: ~$2 Million Dollars; 2) Pinedale 2005 water/sewer replacement project – Recently completed re-leveling and re-surfacing of Tyler Avenue, replacement of sewer and water lines under Tyler, and replacement of valley pans. Cost: ~$2M; 3) Pinedale Infrastructure Project- Water and sewer replacements and upgrades throughout the town to replace aging infrastructure and in anticipation of increased usage due to residential and commercial growth. Cost: $10.6 million; 4) Marbleton Curb and Gutter Project: Existing streets and subdivisions in town just completed (2006), several new subdivisions will require additional curb and gutter projects. Total Cost thus far: $2,110,000; 5)

Marbleton water well to be drilled in Spring of 2007 to accommodate new residential and commercial units; 6) Pinedale Town Shop – New facility required for the increased maintenance associated with new town annexations – cost unknown at this time; 7) Sublette County Library Expansion – 5 Million Dollar expansion slated as library patronage has quadrupled in the past two to three years and the need for increased community meeting space has grown. Current community meeting space is inadequate to hold the various public meetings and hearings associated with energy development, not to mention the various private meetings held by energy firms; 7) Marbleton Town Hall – built in 2006 for $2.8M to accommodate larger town council meeting attendance and the growing need for a larger community meeting space; 8) New Rural Health Care Board (Special District) Medical Clinics in Pinedale and Marbleton – The number of monthly office visits in Pinedale has increased, especially, roughly, in 2000 to 2005; 9) Sublette County Maintenance Buildings -- New county shop built for 5M due to increased maintenance demands from an expanding and deteriorating road system.

Another example of increasing costs to county governments can be found in the SEIS (page 3-21) discussing Sublette County Sheriff's difficulty in hiring and retaining sufficient officers.

II. After reviewing the SEIS, it is apparent that BLM has emphasized the economic benefits of natural gas development in the PAPA, but has failed to adequately address many of the economic costs likely associated with accelerated natural gas development and production, including the costs of compromised air quality, water quality, reduced populations of wildlife, threats to endangered species, increased noise, and others. These effects are discussed in the SEIS (p. 4-16), but the SEIS makes no effort to quantify these recognized effects. However, peer reviewed methods for quantifying both the non-market and market costs of changing environmental quality have been developed by economists and are readily applicable to the present case. For a catalog of these methods see Freeman (2003). For a complete socioeconomic analysis, BLM should adapt these methods to conditions in the PAPA area to obtain a complete catalog of estimates of the economic consequences of Alternatives A and B.

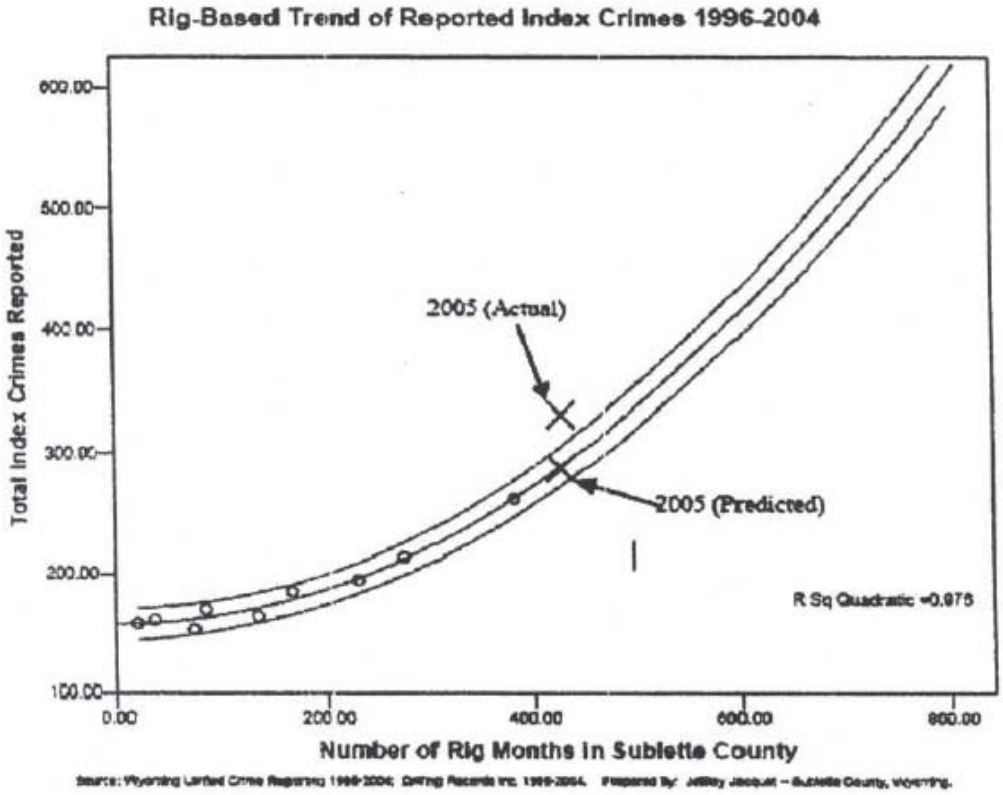
III. In the SEIS, BLM has emphasized the importance of the energy extraction industries, to the apparent exclusion of other industries and other sources of income. However, this emphasis is not supported by the data. In the last 30 years, economies in the West have evolved from being highly dependent on extractive industries to being much more diverse, relying on a variety of economic sectors for stability and growth. (Bennett and McBeth, 1998). A recent study by the Sonoran Institute examining the impact of public land on economic well being in eleven western states found that only three percent of western counties could be classified as resource-extraction dependent (Rasker, et al., 2004). The secondary nature of the resource extraction sectors is also true in Lincoln, Sublette, and Sweetwater counties, those likely to be the most heavily impacted by Alternatives B and C. For example, in Table 3.5-3 of the SEIS, entitled "Employment and Earnings Associated with Natural Gas Development from 2000 to 2005," BLM estimates that total production and development earnings in 2004 were $303,539,123 and $14,300,972, respectively. The total of the two represents 16 percent of total personal income Lincoln, Sublette, and Sweetwater counties.

More importantly, natural gas earnings are dominated by other important sources of personal income, including transfer payments ($221,706,000), dividends and rents ($358, 839,000), and proprietors income ($183,635,000) (U.S. Department of Commerce, 2006). In Lincoln, Sublette, and Sweetwater counties these sources of income represented 40, 49, and 35 percent of personal income, respectively.

IV. In the SEIS, BLM has emphasized the importance of the energy extraction industries and some of the likely adverse consequences for environmental and social quality, but has failed to make the economic connection between the two. There is a vast and growing body of research evidence suggesting that environmental and social amenities, which are likely to be compromised by natural gas development and production, are important determinants of economic growth in western economies (Johnson and Rasker, 1993; Johnson, 2001, Crompton, et al., 1997; Deller, et al, 1998, Lorah, 2000; Marcouiller and Deller, 1996; Power and Barrett 2001).

The evidence in this body of research suggests that, even if the estimates of short term economic benefits contained in the SEIS are taken as accurate, the long run effect of natural gas development could be to place Lincoln, Sublette, and Sweetwater counties at an economic disadvantage, because their environmental and social amenities have been compromised. Indeed, a recent study by the USDA has found that counties pursuing a strategy of economic growth based on recreation have enjoyed greater economic growth, lower poverty rates, higher labor force participation rates, and greater improvements in other social indicators than other counties (Reeder and Brown 2005).

V. In the SEIS, BLM acknowledges that "Changes in employment and income trigger impacts on community services, social structures, and lifestyles (p. 4-30)." But BLM fails to make a connection between this recognition and serious discussion of the potential economic costs of these likely consequences of accelerated natural gas development. One consequence apparently has been an increase in crime rates and arrests, largely related to increases in drug use. A report by the Sublette County and Prosecuting Attorney finds that crime rates and arrests increased at an annual rate of 15 percent from 2000-2004, but accelerated to 30 percent from 2004-2005. The total index of crimes is "highly statistically correlated with gas and oil field activity", as illustrated in the graph below (Barnhart 2006).



The report also finds that "drug use among gas industry employees …has been identified as a significant and growing problem (p. 3)" but also that "there is a 'trickle-down' effect that has become an overwhelming problem…(p. 3)." This effect is being seen in an increase in the number of juveniles in the criminal justice system, growing strain on law enforcement officers, and increased drug use. The economic costs of crime related to drug use in the U.S. has been estimated at over $100 billion (National Institute of Drug Abuse, 1992). The quantification methods are relatively straightforward and could be adapted to conditions in PAPA.

VI. In the SEIS, BLM acknowledges that "Changes in employment and income trigger impacts on community services, social structures, and lifestyles (p. 4-30)" But again there is a failure to make a connection between this recognition and serious discussion of the consequences for the economic well-being of long-time local residents. One set of likely consequences is social, cultural, economic, and environmental disruptions viewed unfavorably by local residents. (See, for example, Fuller 2007).

The SEIS analysis focuses on increasing wages as an indicator of improved economic well-being. However, this focus ignores the fact that rapid growth will change the character of the local community and that these changes will be seen differently by original residents and in-migrants Economic theory provides a cogent argument that original residents and businesses are likely to suffer deteriorating economic well-being as a consequence of rapid natural gas development (Bartik 1991). In-migrants will be those that find community changes most attractive or least unattractive. Local wage increases will be sufficient to attract workers who view the changes as favorable. Conversely, original residents will view the changes unfavorably and the wage adjustments needed to attract in-migrants will be insufficient to compensate them for the qualitative changes to the local community because of substantial mobility costs. Similar types of losses may be experienced by local businesses, especially if their production technologies are linked to resources that deteriorated in quality or quantity as growth continues.

The likelihood of declining well being for original residents has led a leading economist specializing in local economic development to conclude:

> *The possible loss of the special characteristics of a unique place is an argument for economic development policies that only prevent decline of a local area, and against economic development policies that cause rapid growth. Preventing the loss of a sense of place is a possible benefit of only preventing the decline of an area. The loss of a sense of place is a possible cost of encouraging rapid job growth in an area (Bartik, p. 76)*

VII. In the SEIS, BLM states it will violate the Clean Air Act by allowing activity that will cause the exceedance of air quality standards (increments) in Class II airsheds. The NO_2 Class II increments will also be exceeded in and near the Pinedale Anticline field. SEIS Tables M-1, M.15, M.29. PM_{10} Class II increments will also be exceeded at least during the initial stages of development. SEIS Tables M.15, M.29. From the standpoint of socioeconomic impacts, the SEIS conclusion that "…there would be no violations to applicable federal and state air quality standards (SEIS vi)" is not salient. This is because the impacts of many common forms of air pollution, including NO_2 , Ozone, and PM_{10} have no known thresholds below which these pollutants do not adversely impact human health (except zero) and "adverse health effects can occur at pollution levels lower than ambient standards (p. 376)" (Tietenberg 2006). In other words, the additional pollution resulting from accelerated PAPA development is very likely to adversely affect the health of area residents, workers, and visitors.

It is well established that particulate matter (PM) is associated with premature mortality, chronic illness, hospital emissions, and respiratory symptoms/illness, while ozone- related adverse health consequences

include chronic illness, hospital admissions, and symptons/illnesses not requiring hospitalization (Akeson, et al., 1999, Exhibits 4-1.and 4.2).

Moreover, the science of quantifying the economic consequences of air pollution (and air pollution control) is one of the most well developed topics in environmental economics. The methodologies used are well established, peer-reviewed, and used by other federal agencies. For example, the cost of avoiding illness (COI) is often used as a lower bound estimate for peoples' willingness to pay to avoid illnesses. COI estimates for respiratory illnesses range from $6,300 (Burnett, et al. 1999) to $12,000 (Schwartz 1994) per incident.

A more complete analysis of Alternatives B and C requires that BLM adapt extant methodologies to conditions in and around PAPA to produce quantitative estimates of the economic costs resulting from the adverse health effects of air quality deterioration.

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[ii] The project descriptions and costs were provided by Jeffrey Jacquet, Sublette County Socioeconomic Analyst, March 27, 2007.