March 26, 2007

Pinedale Anticline Project Area Draft Supplemental EIS
Project Manager
Bureau of Land Management
Pinedale Field Office
432 East Mill Street
P.O. Box 768,
Pinedale, Wyoming 82941

RE: Comments on the Air Quality Analyses for the Pinedale Anticline Oil and Gas Exploration and Development Project Draft Supplemental Environmental Impact Statement

Dear Pinedale Anticline Project Area Draft Supplemental EIS Project Manager:

We are writing to submit comments on the December 2006 Draft Supplemental Environmental Impact Statement (DSEIS) for the Pinedale Anticline Oil and Gas Exploration and Development Project. Our comments pertain to the air quality analyses of the Pinedale Anticline project area. These comments were developed pursuant to a grant from the William and Flora Hewlett Foundation.

The BLM's air quality modeling analyses performed for the Pinedale Anticline project area indicate that adverse impacts on air quality would occur due to the Pinedale Anticline project sources alone and cumulatively when considering other sources in the region. Furthermore, year 2005 modeling conducted for the DSEIS indicate that an alarming amount of visibility impairment is already occurring due in part to current development in the Pinedale Anticline area. An analysis of these impacts is detailed in Part I of our comments in the attachment to this letter. Further, the air quality analyses presented in the DSEIS and Air Quality Impact Analysis Technical Support Document (TSD) contain numerous deficiencies as detailed in Part II of our comments. As a result of these deficiencies, it is likely that air quality impacts would be predicted to be more severe than what was presented in the DSEIS.

One of the concerns identified in the DSEIS was that air quality in the region should be "fully evaluated with respect to sensitive airsheds and local air quality, and mitigation measures should be proposed, where necessary." DSEIS at 2-2. Based on our review, the BLM has not fully and accurately evaluated the air quality impacts from the proposed development and has not proposed adequate enforceable mitigation measures to assure no adverse impacts on air quality are occurring or will occur in the affected area. In fact, the BLM does not put forth any alternatives in the DSEIS that fully protect air quality in the area. The proposed Alternative C Phase II Mitigation sets a "goal" of achieving zero days of visibility impairment over 1.0 deciview (dv) at Bridger Wilderness Area but it does not establish enforceable mitigation measures that will meet that goal and it does not

establish enforceable mitigation measures that will ensure no violations of other Clean Air Act standards (e.g., compliance with all Prevention of Significant Deterioration (PSD) increments). Instead, the BLM's Alternative C Phase II Mitigation proposes to allow for five years of development with the hope that the Operators will reduce emissions sufficiently so as to prevent visibility impairment in the Bridger Wilderness Area. If modeling after five years shows visibility impacts then, and only then, will the BLM establish a mitigation plan. Specifically, the DSEIS states that:

> "Within 5 years after issuance of the ROD, the Operators must demonstrate annually through modeling that their plan to further reduce visibility impairment at the Bridger Wilderness Area is effective. 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." DSEIS at 4-75.

The BLM must propose a detailed and enforceable mitigation plan, using any and all means, prior to issuance of the ROD that will ensure no visibility impairment and no other violations of Clean Air Act standards. The wait-and-see approach proposed by the BLM will not ensure that air quality is protected. If the BLM authorizes this project, its actions will not protect, restore, or enhance air quality. The BLM must prepare a proper air quality analysis and then must develop an alternative that results in no violations of Clean Air Act standards.

We both have many years of experience working on air quality issues. Our curricula vitae are enclosed for further information on our expertise. Based on our air quality experience, we believe the Pinedale Anticline Oil and Gas Exploration and Development Project will have significant impacts on air quality and that those impacts have not been adequately discussed or disclosed in the DSEIS. In the attachment we detail our specific concerns with the air quality analyses presented in the DSEIS and the Air Quality Impact Analysis TSD. Our comments however do not address the supplemental ozone analysis, which will be commented on under separate cover by Dr. Jana Milford.

Thank you for consideration of our comments. Please include both of us on the mailing list for any future actions on the Pinedale Anticline Oil and Gas Exploration Project draft supplemental EIS.

Sincerely,

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Attachments

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ATTACHMENT

PART I
The BLM's Own Assessment Indicates the Proposed Development Will Have Significant Impacts on Air Quality

This part of our comments pertains to the results of the BLM's assessment, as presented in the Draft Supplemental EIS (DSEIS) and the Air Quality Technical Support Documents (Volumes 1 and 2).

Under NEPA, the Bureau of Land Management has obligations to assess and report the cumulative impacts of expected emissions from the proposed project on the National Ambient Air Quality Standards (NAAQS), prevention of significant deterioration (PSD) increments, and air quality related values (AQRVs), and to identify alternatives or other mitigation measures sufficient to prevent expected violations of NAAQS, PSD increments and adverse impacts on AQRVs. Furthermore, the Federal Land Policy and Management Act (FLPMA) mandates that, "In the development and revision of land use plans, the Secretary shall . . . (8) provide for compliance with applicable pollution control laws, including State and Federal air, water, noise, or other pollution standards or implementation plans…"(43 U.S.C. § 1712(c)(8); See also 43 C.F.R. § 2920.7(b)(3) (requiring the same for land use authorizations).

In order to meet its obligation under FLPMA to "provide for compliance" with the requirements of the Clean Air Act (CAA), the BLM must identify an allowable level of emissions for the proposed project that would not cause or contribute to violations of pollution limits in the ambient air or adverse impacts on AQPVs in Class I areas, and identify mitigation capable of preventing such violations. Unfortunately, the BLM has failed to follow these requirements with this DSEIS. All alternative scenarios are shown to violate at least one, if not several of the air quality standards laid out by the CAA and mandated for NEPA projects under FLPMA. Even alternative C, which is indicated as the BLM's preferred alternative in the "Dear Reader" letter for this DSEIS, is predicted to result in NO_2 and PM_{10} increment violations as well as additional visibility impairment, including in Class I areas. Even more troublesome is the fact that the emissions inventory for the DSEIS under-predicts potential emissions from this project, meaning that the adverse air quality impacts detailed in Part I of our comments would likely be even worse in reality (see Part II of this letter).

Increment Violations

Violations of the NO_2 Increment Predicted

Almost all of the scenarios modeled for the no action alternative (Alternative A), the proposed action alternative (Alternative B) and Alternative C (the BLM's preferred alternative) indicate that Pinedale Anticline project sources will cause "direct predicted impacts" greater than the PSD Class II increment for NO_2 of 25 $\mu g/m^3$ (annual average). First of all, even modeling for the no action alternative shows a predicted NO_2 violation

of 39.9 μg/m^3 using the maximum near-field concentrations from direct project impacts and a violation of 52.8 μg/m^3 using the maximum in-field concentrations from direct project sources (see Appendix M, Tables M.1 and M.15, December 2006 Appendices). Furthermore, the maximum modeled cumulative in-field pollutant concentrations from direct project and regional sources is predicted to be 53.1 μg/m^3 for the no action alternative (see Appendix M, Table M.29).

Modeling for the proposed action (Alternative B) predicts the same or even worse violations of the NO_2 increment. Under the maximum near-field concentrations from direct project sources scenario the violation is once again 39.9μg/m^3 (see Appendix M, Table M.1). The maximum in-field concentrations from direct project sources scenario resulted in 60.5 μg/m^3 for the NO_2 increment, while the maximum modeled cumulative in-field pollutant concentrations from direct project and regional sources is predicted to be 60.8 μg/m^3 (see Appendix M, Tables M.15 and M.29).

Even the modeling for Alternative C predicts violations of the NO_2 increment except when the 80% drill rig mitigation scenario is used. In-field modeling for direct project sources under Alternative C Phase I Mitigation predicts 37.0 μg/m^3 while Alternative C Phase II Mitigation brings the figure below the increment (10.3 μg/m^3) (see Appendix M, Table M.15). Predicted impacts from the maximum modeled cumulative in-field pollutant concentrations from direct project and regional sources did not increase much for Alternative C. Alternative C Phase I Mitigation showed 37.3 μg/m^3 while Phase II Mitigation would again come in below the NO_2 increment at 10.8μg/m^3 (see Appendix M, Table M.29). As will be explained in more detail in Part II of our comments, the emissions inventory for the draft SEIS significantly under-predicts the emissions from this project, so in reality the increment violations could be much worse than shown here.

In 2005, the Wyoming Department of Environmental Quality (WYDEQ) released a report on NO_2 increment consumption in Sublette County, Wyoming.[1] This analysis indicated that a maximum of anywhere from 11.16 μg/m^3 to 12.23 μg/m^3 of NO_2 increment was already consumed in Sublette County (Table SR-12 of WYDEQ NO_2 Increment Report). Considering this analysis, along with the additional increment consumption resulting from the increased development already underway in the Jonah Infill and the predicted impacts from the proposed Pinedale Anticline project, the NO_2 increment in Sublette County would be significantly violated under most of the proposed development scenarios. It is noteworthy that BLM's predicted Phase II NO_2 increments are <u>less</u> than what has <u>already</u> been determined to have been consumed in the DEQ study, an impossibility unless additional NO_2 reductions are occurring besides those described in the DSEIS.

Furthermore, the BLM has not included emissions from drilling rigs in its increment analysis because it states that they are, "temporary and do not consume PSD increment," (Air Quality TSD, volume 1, page 26). On the contrary, these sources will not be temporary; this drilling will go on for several years, well in excess of the two years

[1] Summary Report, Southwest Wyoming NO_2 PSD Increment Consumption Modeling: Results for Sublette County, September 15, 2005 (WYDEQ NO_2 Increment Report)

typically considered by EPA as temporary, (see, e.g., 43 Fed.Reg. 28394, June 29, 1978). Under either Alternative B or C, large numbers of wells will be drilled from a single well pad, meaning drill rigs will remain in a fixed area for extended periods of time,

Predicted PM_{10} Increment Violations

The Class II PSD increments for PM_{10} would likely be violated under most of the modeled scenarios. (The 24-hour average increment is 30 $\mu g/m^3$ and the annual increment is 17 $\mu g/m^3$.) The maximum modeled near-field concentrations for direct project sources predicts 24-hour average concentrations of 74.2 $\mu g/m^3$ for both the no action and proposed action alternatives (see Appendix M, Table M.4). The in-field modeling scenarios for direct project sources predict violations of the annual PM_{10} increment for Alternative A with 18.3 $\mu g/m^3$. The in-field modeling scenario also resulted in a predicted violation of the 24-hour PM_{10} increment under the no action alternative (51.4 $\mu g/m^3$) but the other scenarios were extremely close to the increment at 24.6 $\mu g/m^3$ for the proposed action, 29.9 $\mu g/m^3$ for Alternative C Phase I Mitigation and 29.6 $\mu g/m^3$ for Alternative C Phase II Mitigation (see Appendix M, Table M.15). The maximum modeled cumulative in-field pollutant concentrations from direct project and regional sources predict violations under Alternative A of the 24-hour (51.5 $\mu g/m^3$) and the annual (18.8 $\mu g/m^3$) PM_{10} increments. Alternative C Phase I Mitigation would also violate the 24-hour increment at 30.1 $\mu g/m^3$, while Alternatives B and Alternative C Phase II Mitigation are predicted to be close to violating at 25.1 $\mu g/m^3$ and 29.6 $\mu g/m^3$, respectively (see Appendix M, Table M.29). In addition, the emissions inventory for the draft SEIS significantly under-predicts the emissions from this project, so in reality the increment violations could be much worse than shown here.

Draft SEIS Does Not Disclose Expected Violations

Unfortunately, the draft SEIS does not disclose some of the potential Clean Air Act violations that this proposed project could cause. Section 4.9.3.2 of the draft SEIS refers to Table M.15 in Appendix M and states that the in-field modeling for the no action alternative predicts levels below the annual PM_{10} increment of 17 $\mu g/m^3$, when in fact, the level shown in the TSD is 18.3 $\mu g/m^3$ as noted above. Referring to the proposed action alternative, section 4.9.3.3 contains a similar error, when the near-field modeled 24-hour PM_{10} increment violations of a staggering 74.2 $\mu g/m^3$ is not even mentioned (see Appendix M, Table M.4). In the discussion of Alternative C, under section 4.9.3.4, the draft SEIS simply states that the near-field modeled impacts are similar to the proposed action alternative impacts. This seemingly glosses over the fact that the TSD shows modeled violations of the NO_2 and PM_{10} increments for BLM's preferred alternative (see above comments).

The NEPA documents appear to intentionally mislead the public and the decisionmaker by stating that there are no PSD increment violations in some modeled situations, when in fact, the TSD shows otherwise. The BLM must consider the PSD increments as important and legally binding Clean Air Act requirements. The numerous statements by the BLM in the draft SEIS and its supporting documents that, "The PSD demonstrations serve information purposes only and do not constitute a regulatory PSD increment consumption analysis, which may be completed as necessary by the Wyoming

Department of Environmental Quality – Air Quality Division," are incorrect and misleading. Indeed, the "maximum allowable increases" (also known as "PSD increments") are separate ambient air quality standards not to be exceeded, as set out in §163 of the Clean Air Act, that apply *in addition to* the national ambient air quality standards in clean air areas. The BLM is required under FLPMA, 43 U.S.C. § 1712(c)(8), to "provide for compliance with" all Clean Air Act requirements, and thus the BLM cannot authorize an action that would allow the PSD increments to be exceeded. (See also 43 C.F,R. § 2920.7(b)(3) (requiring the same for land use authorizations.)

The BLM Must Consider the Potential Critical Impacts of the Modeled Violations
In the past, the BLM has indicated that the predicted PSD increment violations in EIS documents should not be considered as real increment violations because they are modeled. However, because an increment violation is the measurement of the amount of pollution above a baseline concentration, an increment violation cannot be monitored. Monitoring data would not differentiate between an existing concentration and the amount of additional pollution added by a new polluting source or sources. Determinations of increment violations can only be accomplished via modeling, and BLM had done just that. It has modeled violations of the legally mandatory PSD increments that will occur as a result of implementation of the Pinedale Anticline project as currently planned, which BLM cannot allow. As mentioned above, FLPMA and related regulations specify that all CAA requirements be met in the development of land use plans as well as specific authorizations for land use. The BLM is required to "provide for compliance with" all CAA requirements, and cannot authorize an action that would violate the PSD increments, which are a CAA requirement under Section 163.

Current and Predicted Visibility Impairment

Current Visibility Impairment Ignored
In addition, the draft SEIS does not account for or even adequately acknowledge the fact that the year 2005 modeling shows 45 days above a 1.0 deciview (dv) change in visibility impairment at the Bridger Wilderness Class I area. The 2005 modeling also predicted five additional days of impairment above 1.0 dv at the Fitzpatrick Wilderness Class I area, and one additional day above 1.0 dv at Grand Teton National Park Class I area. Even more disturbing is that there were 87 additional days above 0.5 dv predicted for the Bridger Wilderness Area, along with at least several additional days above 0.5 dv at all other nearby Class I areas with the exception of North Absaroka Wilderness Area (see Appendix I, Table 1.9 and Air Quality Analysis TSD, Vol 1, Table E.12.1). Note that these are the results of the 2005 modeling scenario using visibility method 6, which assumes a dirtier background than does method 2. The results using method 2 are even worse, with 61 additional days above 1.0 dv and 97 days above 0.5 dv at Bridger Wilderness Area along with numerous additional days of impairment at the other nearby Class I areas (see Air Quality Analysis TSD, Vol 1, Table E.14.1). **Because calculations for visibility impairment from the proposed project are only based on the incremental amount (or number of days) above 1.0 dv using 2005 as the baseline year, the effect is that the visibility impairment already caused by the unexpected additional pollution from current development in the Pinedale Anticline are ignored**

by this draft SEIS. The real world application here is that the visibility degradation that has already taken place, especially in the Bridger Wilderness Area, will not be reversed. These days have effectively been built into the natural background. The proposed project scenarios already show visibility impairment in most cases, but the previous degradation should also be built into the SEIS with adequate measures to plan for its reversal. This is necessary to meet BLM's obligation under NEPA to ensure the professional and scientific integrity of the DSEIS, as well as its obligations under the Clean Air Act to not only prevent future impairment of visibility, but to also remedy existing impairment. 40 C.F.R. § 1502.24, 42 U.S.C. 7491(a)(1).

Predicted Visibility Impacts
The BLM used several different visibility modeling scenarios for the draft SEIS, but all of the scenarios, including the preferred alternative (Alternative C) show many additional days of impairment at the numerous Class I areas near the Pinedale Anticline Project Area (PAPA). The modeling scenarios for the direct impacts and the cumulative analysis indicate that the Federal Land Managers' (FLMs') level of adverse visibility impact (0.5 dv) will be exceeded many times in all cases at the Bridger Wilderness Area and that all scenarios also show impairment above 1.0 dv in Bridger. Most of the other Class I areas are also adversely impacted under the modeling scenarios. Outcomes for the proposed alternative scenarios range from a predicted low of 60 additional days above 1.0 dv and 108 days above 0.5 dv to a high of 88 days above 1.0 dv and 146 days above 0.5 dv at the Bridger Wilderness Area in 2009 (see Air Quality Analysis TSD, Vol 1, Tables E.12.3-E.16.8). Even the most protective alternative, Alternative C Phase II, predicts visibility impacts at most Class I areas, with numerous impacts under all scenarios at Bridger.

In addition, these visibility impacts were likely underestimated in the draft SEIS due to deficiencies in the emissions inventories as well as assumptions used in the modeling analyses. Under federal requirements, the BLM must not authorize the PAPA project if it will cause or contribute to adverse impacts on visibility in any Class I area. The draft SEIS fails to provide an adequate mitigation scenario that would remedy the additional adverse visibility impacts predicted for several protected Class I areas.

The Standard for Visibility Impairment in the Class I Areas Should be 0.5 dv, not 1.0 dv.
Although the BLM has used a change of 1.0 dv to denote visibility impairment in the DSEIS, a threshold of 0.5 dv is much more protective of visibility in Class I areas. The Clean Air Act and subsequent EPA regulations also point to the importance of a 0.5 dv threshold. "Visibility impairment" is defined by the Clean Air Act as a reduction in visual range and atmospheric discoloration.[2] Under the regional haze regulations states are required to consider a change of 0.5 dv for determining Best Available Retrofit Technology (BART) eligibility for stationary sources.[3] As Dr. Jana Milford explained on September 26, 2005 in comments on the Jonah Infill Draft EIS Air Quality Supplement:

[2] 42 U.S.C. § 7491(g)(6).
[3] 70 Fed. Reg. 39104, 39120.

> "EPA stated in the BART rulemaking that "changes in light extinction of 5% will evoke a just noticeable change in most landscapes."[4] The reference for this statement is a 1990 National Acid Precipitation Assessment Program report[5] that estimated perception thresholds for landscapes using a psycho-physical model of just noticeable changes in scenic brightness. An even lower threshold might occur for some viewers, scenes and viewing conditions.[6] The model used in the NAPAP assessment to derive the 0.5 dv threshold is relevant for situations of uniform haze, which is the case at issue with oil and gas development, where construction and production phases involve dispersed sources of NOx, SO_2, PM-2.5 and PM-10, all of which contribute to visibility degradation. Of note, the 2002 paper by Professor Ron Henry that is often cited for the suggestion that a threshold value higher than 0.5 dv should be used is not persuasive, because it considers thresholds for perceptible changes in colorfulness, ignoring brightness.[7] Both of these visibility attributes are important, and are better captured by using the 0.5 dv standard."

The Federal Land Managers' 2002 FLAG report, concluded that "for the case of visibility impairment which changes the appearance of a viewed background feature [i.e., uniform haze as opposed to a plume], thresholds of perceptibility, where a just noticeable change occurs in the scene, have been found to correspond to a change in extinction (Δb_{ext}) as low as 2% under ideal conditions, up to 20% (NAPAP, 1990; Pitchford and Malm, 1994). A Δb_{ext} of 5% will evoke a just noticeable change in most landscapes (NAPAP, 1990). The FLMs are concerned about situations where a change in extinction from new source growth is greater than 5% as compared against natural conditions. Changes in extinction greater than 10% are generally considered unacceptable by the FLMs and will likely raise objections to further pollutant loading without mitigation."[8]

The DSEIS states that the Forest Service and the National Park Service (NPS) both use a 0.5 dv change as their threshold for identifying visibility impairment (see DSEIS 4-66 for one such statement). Because the Class I areas with potentials to be adversely impacted by this proposed project are either under Forest Service or NPS control, the BLM must fully acknowledge and discuss the significance of impacts using their impact threshold of 0.5 dv, even if it does not adhere to this standard. NEPA is fundamentally a full disclosure statute, and failure to fully acknowledge impacts at the 0.5 dv level fails to meet this promise. In the comments on the Jonah Infill, Dr. Milford goes on to explain that using a 1.0 dv threshold for visibility impairment, "…fails to "achieve the requirements" of sections 101 and 102(1) of NEPA. Id. See also 42 U.S.C. § 4331 (stating among other things that it is the "continuing responsibility of the Federal

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[4] 69 Fed. Reg. 25184, 25194.
[5] Acidic Deposition: State of Science and Technology Report 24: Visibility: Existing and Historical Conditions – Causes and Effects, Washington, DC, 1991
[6] See NAPAP, 1990, pp. 24-36 – 24-37.
[7] R. Henry, Just Noticeable Differences in Atmospheric Haze, J. Air & Waste Manage. Assoc., 52:1238-1243, 2002.
[8] Federal Land Mangers' Air Quality Related Values Workgroup (FLAG) Phase I Report, December 2002, p. 26.

Government to use all practicable means" to "assure for all Americans safe, healthful, productive, and esthetically . . . pleasing surroundings.")."

Predicted Visibility Impacts are Important for Wyoming's Regional Haze SIP
The BLM should coordinate with the Wyoming DEQ to ensure that the predicted impacts due to the planned increased oil and gas production in the PAPA be accounted for in the State Implementation Plan (SIP) for visibility. The current visibility impairment should be addressed during the periodic review and revision process for the reasonably attributable visibility impairment portion of the SIP while future impairment should be included in the regional haze SIP, due December 2007. Specifically, the future increases in visibility impairment should be included in the reasonable further progress and long-term strategy sections of the regional haze SIP. Even though BART will be used in the SIP to address emissions from major stationary sources, oil and gas sources are a major contributor to the visibility problem in Wyoming and should therefore also be accounted for in the regional haze SIP. We realize that the BLM is not the entity with rulemaking authority for the visibility SIP, but it has a responsibility to properly coordinate with the Wyoming DEQ to ensure that the adverse visibility conditions which are a result of BLM approved projects are improved in the state.

The Proposed Development Threatens to Violate the $PM_{2.5}$ NAAQS

Several modeling scenarios predict $PM_{2.5}$ concentrations that would threaten the new 24-hour $PM_{2.5}$ NAAQS of 35 $\mu g/m^3$, promulgated on December 18, 2006. The maximum modeled near-field $PM_{2.5}$ concentrations from direct project sources is 29.3 $\mu g/m^3$ for the no action and proposed action alternatives, which is 85% of the new $PM_{2.5}$ standard (see Appendix M, Table M.5). The maximum modeled cumulative in-field $PM_{2.5}$ concentration from direct project and regional sources is 32.5 $\mu g/m^3$ for the no action alternative, 30.2 $\mu g/m^3$ for the proposed alternative, and 28.0 $\mu g/m^3$ for Alternative C Phase I Mitigation (see Appendix M, Table M.29). Although no actual modeled NAAQS violations were predicted in the draft SEIS, because of the deficiencies in the emissions inventory (see Part II of our comments) these impacts were likely underestimated. It is imperative that the BLM properly assess whether the health-based NAAQS will be complied with in the Pinedale Anticline area, and that it not allow any development that would threaten compliance with these standards.

HAP Impacts

EPA's National Air Toxics Assessment (NATA) shows elevated levels of formaldehyde, benzene and 1,3 butadiene in portions of Wyoming in modeling for the year 1996.[9] Since oil and gas operations have grown significantly since that time, one could assume that the situation has only worsened.

Under NEPA, the BLM must disclose the cumulative impacts of the proposed project. However, it is unclear whether cumulative HAP impacts were analyzed for this draft

[9] U.S. Environmental Protection Agency, National Air Toxics Assessment, http://www.epa.gov/ttn/atw/nata/

SEIS. It appears that most of the BLM's estimates are only for incremental risk associated with the project, and would be imposed on top of existing health risks. According to the Air Quality TSD, cumulative formaldehyde impacts were used for the long-term cancer risk scenario, but this is the only HAP where this appears to have been done. BLM of course has an obligation under NEPA to fully consider the cumulative impacts of every relevant environmental concern.

Furthermore, BLM should quantify emissions from 1,3-butadiene, secondary formaldehyde and diesel exhaust. 1,3 butadiene is recognized as a known human carcinogen[10] and is a product of the combustion of gasoline and diesel oil, among other things.[11] It also appears that the BLM's analysis for this draft SEIS did not quantify secondary emissions of formaldehyde. If this is indeed the case, the BLM should notify the public within the document that it has not included all possible estimations of cancer risk. The BLM seems to have only quantified primary formaldehyde emissions expected from this proposed project, not the contribution of other volatile organic compounds (VOCs) emitted from the project to the formation of secondary formaldehyde in the atmosphere downwind from the points of emission. If the BLM has indeed included these emissions, it should provide an explanation so that the analysis is clearer to the public.

Additionally, the BLM's assessment has entirely neglected the cancer risk associated with diesel exhaust emissions from oil and gas development, which may be highly significant. EPA's health assessment for diesel exhaust found that long-term exposure poses lung cancer risks while short-term exposures can cause lung irritation and inflammation.[12] Hundreds of heavy diesel trucks will be required to develop and operate in the field, and well drilling will likely be done by large diesel powered drilling rigs. The BLM must disclose these potential impacts in association with the risks presented by formaldehyde and benzene emissions.

Ecosystem impacts

In 2006, the Air Quality Task Group (AQTG), under the Pinedale Anticline Working Group (PAWG) produced a report on air quality monitoring. This report identified increasing nitrate levels at all sampled lakes in the Bridger and Fitzpatrick Wilderness Areas and concluded that the increases are probably in part due to regional sources. Hobbs Lake, in the Bridger Wilderness Area, is showing a decrease in acid neutralizing capacity (ANC) and acidification is starting to occur. The report also states that the USFS is very concerned about Black Joe Lake, also in the Bridger Wilderness Area, because ANC is decreasing, while nitrate and sulfate levels are increasing in parts of the lake. These results mean that nitrification of the lake is occurring, with this being the

[10] U.S. Environmental Protection Agency, Integrated Risk Information System, http://www.epa.gov/iris/subst/0139.htm
[11] U.S. Environmental Protection Agency, OAQPS, *Locating and Estimating Air Emissions from Sources of 1,3-Butadiene*, EPA-454/R-96-008, November 1996.
[12] U.S. Environmental Protection Agency (U.S. EPA), *Health Assessment Document for Diesel Engine Exhaust*, May 2002, 1-3, available at http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=29060.

first step towards eutrophication.[13] Given the fact that lakes in areas nearby the PAPA are already experiencing impacts, this draft SEIS should provide a means to limit any additional impacts. At a minimum, it must acknowledge and discuss these impacts.

Nitrogen and Sulfur Deposition Analyses
While no actual deposition thresholds in sensitive areas are predicted to be threatened by this proposed project (although as the draft SEIS states on page 4-67, that the USFS thinks these threshold levels may be set too high) the results of the year 2005 modeling and the proposed project scenarios resulted in many values above the National Park Services' deposition analysis threshold (DAT) for nitrogen deposition and as well as a few for sulfur deposition. The threshold for both pollutants is 0.005 kilograms per hectare per year. Volume 1 of the air quality TSD states that there were no values above the DAT for sulfur deposition for any of the direct project impact scenarios. But, according to Table M.19 in Appendix M, the DAT for sulfur deposition at Bridger is 0.0093 under Alternative C. There is either an error in this table or the TSD needs to be amended to reflect this apparent elevated value. The TSD also does not include a write-up of the modeling results for nitrogen and sulfur deposition impacts from direct project and regional sources. Tables M.32 and M.33 in Appendix M show several values above the DAT for nitrogen and 2 for sulfur deposition under the direct project and regional sources scenario. This is an impact of potential significance recognized by the Federal Land Managers, so BLM must consider and discuss these elevated DATs in the DSEIS.

Altogether, the predicted NO_2 and PM_{10} increment violations, the current and predicted visibility impairment, the threatened $PM_{2.5}$ NAAQS, and the ecosystem impacts from nitrogen deposition present an alarming scenario for the future of air quality and the environment in the Pinedale Anticline and surrounding areas, which is amplified by the fact that these modeled scenarios are most likely under-predicted (as will be shown in the next Part of our comments).

PART II
The BLM's Air Quality Analysis, as Presented, is Seriously Deficient and Likely Under-predicts Air Quality Impacts

This part of our comments details the numerous deficiencies in the BLM's emissions inventories and modeling analyses presented in the Draft Supplemental EIS (DSEIS) and the Air Quality Technical Support Documents (Volumes 1 and 2). As described in detail below, the BLM has failed to include all relevant sources in its modeling inventory and has under-predicted emissions from sources it did include.

The Pinedale Anticline Emissions Inventories Assume Certain Emissions Controls that are Not Identified as Enforceable Mitigation Measures

The BLM's modeling analyses are based on a number of assumptions on emissions controls that must be made enforceable if they are to be the basis for the BLM's impacts

[13] Air Quality Task Group, Pinedale Anticline Working Group, "2005 Air Quality Monitoring Report," May 12, 2006.

analyses and final decision on the proposed action. It is not a reasonable assumption that the emissions will be controlled to the extent used as the basis for the modeling, unless the BLM will be imposing these reduction requirements as enforceable mitigation measures. No commitment to establish federally enforceable limits has been made in the draft SEIS. The BLM's assumptions are not justified without being identified as mitigation measures and made enforceable by the BLM.

Specifically, the proposed action and no action emissions inventories presented in the AQTSD assumed 85% control of fugitive dust emissions from unpaved local roads due to the use of magnesium chloride and 50% control of fugitive dust emissions from well pad construction and resource roads due to watering. See, for example, AQTSD Volume 1 at 9 and AQTSD Volume 2 at F3-2 through F3-12, F3-16, F3-17, F3-52, F3-54, and F3-55. In addition, these same inventories assumed 50% control of fugitive dust emissions from construction- and production-related wind erosion. See, for example, AQTSD Volume 2 at F3-9 and F3-57. The BLM must make a clear commitment to establish, as an enforceable measure, these control requirements if it will be basing its final decision on this level of control.

Similarly, the proposed action and no action emissions inventories assumed that all "Frac Engines and Other Completion Engines" meet EPA's Tier 2 requirements for nonroad diesel engines. This assumption is based on data provided by operators and Frac engine contractor, Halliburton. AQTSD Volume 2 at F3-51 and F4-40. It is important to note that EPA's regulations for nonroad diesel engines require that all engines *manufactured* after certain dates meet Tier 2 emission standards but that nothing prohibits the operation of nonroad engines built before those deadlines that do not meet those standards, unless the BLM mandates otherwise. Furthermore, given that drill rigs in the area are only achieving Tier 2 compliance on a spotty basis and in fact will be given several additional years to move toward Tier 2 compliance under the BLM's Alternative C Phase II mitigation plan, we see no rational basis for the BLM to assume that <u>all</u> Frac and Completion engines will <u>immediately</u> meet Tier 2 emissions standards.

Finally, the modeling analyses assume that all completions would be "green completions" with no flaring except in emergency or upset conditions (i.e., no flaring emissions are modeled). AQTSD Volume 1 at 9. Again, unless the BLM mandates the sole use of green completions, the BLM must consider the impacts of other completions and the associated flaring. The latest information on the Wyoming DEQ's Oil and Gas website indicates that, in fact, some of the completions in the Pinedale and Jonah development areas could include flared gas.[14] Specifically, there is a "Completions Emissions Worksheet" dated February 2005 that shows example calculations for emissions from flaring. If the BLM is going to assume all completions in the Pinedale Anticline project area are flareless then the BLM must make that an enforceable requirement. We would also note that in rejecting consideration of a conservation alternative in the DSEIS, the BLM stated that it was "unreasonable to expect that all completions will be "green" because of safety issues or location (insufficient production pressure)." SEIS at 2-39.

[14] http://deq.state.wy.us/aqd/oilgas.asp

The Pinedale Anticline Emissions Inventories Underestimate NO_x Emissions from Drill Rigs and From the Pinedale Compressor Station

The BLM's proposed action emissions inventory does not appear to be based on long enough drilling activity duration times (i.e., the number of days it is predicted to take to drill one well). The drill rig inventories are based on information provided by the operators for the number and type (Tier 0, 1 or 2) of drill rigs proposed for each year of development, power requirements (hp) and drilling activity duration (e.g., estimates for the number of drilling days per well and the number of hours per day of drill rig operation). For 2009 (the year with the predicted maximum air quality impacts for the proposed action alternative) the operators estimated a total of 48 drill rigs and a total of 305 wells drilled. AQTSD Volume 2 at F3-72. However, the estimated average number of days of drilling required per well for the 48 drill rigs indicate that over 380 wells could be drilled in 2009.[15] For the estimated 305 wells in 2009, the duration rate would need to average out to 57 days per well, instead of the 46 days per well, on average, that was modeled. This increase in the potential number of wells drilled would result in a 25% increase in annual NO_x emissions from drilling in 2009. The BLM must reconcile the discrepancy in these data and model the potential number of wells drilled based on consistent duration activity data (i.e., either the emissions must be based on an average duration of 57 days/well in 2009 or the number of wells modeled for the year must be 381).

In addition, the 2009 annual NO_x emissions from Ultra's drill rig engines in the proposed action inventory (Table F.3.74) are not consistent with the emissions calculations in Tables F.3.23 and F.3.24 of Volume 2 of the AQTSD. The annual emissions should be 1,238 TPY, instead of the 1,093 reported in Table F.3.74.[16] This results in an underestimate of annual NO_x emissions from Ultra's drilling engines of 13%. The overall annual NO_x emissions in 2009 for all operators should be 3,325 TPY, instead of the 3,180 TPY reported in Table F.3.74. This represents an underestimate of 5% of the annual NO_x emissions from all drill rig engines in 2009.

Annual NO_x emissions from drill rig engines represent over half of all annual NO_x emissions for the Pinedale Anticline proposed development project (57%) and represent 84% of all construction-related NO_x emissions. So, underestimating annual NO_x emissions from this source category could significantly change the extent of air quality

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[15] The weighted average drilling duration for 2009 is 46 days/well based on operator data:
Questar – 15 rigs at 40 days/well
Ultra – 16 rigs at 55 days/well
Shell – 10 rigs at 40 days/well
Yates – 1 rig at 47 days/well
Anschutz – 4 rigs at 47 days/well
BP/Stone – 2 rigs at 47 days/well
(48 rigs) / (46 days/well) x (365 days/yr) = **381 wells/yr**
(48 rigs) / (**57 days/well**) x (365 days/yr) = 305 wells/yr

[16] Ultra is proposing to drill 106 wells in 2009 using 5 Tier 1 rigs and 11 Tier 2 rigs with the following emission rates:
[(5 T1 rigs) x (15.35 tons/well) + (11 T2 rigs) x (10.01 tons/well)] / (16 rigs) x (106 wells/yr) = 1,238 TPY

impacts from the proposed action development scenario, which already shows violations of the Class II annual NO_2 PSD increment, and which shows near-violations of other standards, as discussed in Part I.

Another source category where the BLM has underestimated NO_x emissions is the compressor stations. Specifically, the emissions increase from the proposed Pinedale Compressor Station expansion in the proposed action inventory is based on a NO_x emission factor for turbines of 0.2 g/hp-hr (provided by Questar). AQTSD Volume 2 at F3-64. All other compressor station NO_x emissions are calculated with an emission factor for turbines of 0.4 g/hp-hr, which, according to the notes in the inventory, is based on a permitted emission rate from the Bird Canyon Permit (MD-1013, issued June 23, 2004). There is no support in the draft SEIS for the concept that compressor engines at the Pinedale Compressor Station will be subject to a stricter NO_x emission rate of 0.2 g/hp-hr. If the BLM is to maintain that this emission factor is appropriate it must come forward with information that the Wyoming DEQ will require that all state permits for compressors supporting the Pinedale Anticline field do or will require a 0.2 g/hp-hr emission factor, or otherwise ensure this is a federally enforceable standard. If the BLM modeled NO_x emissions from the turbines at the Pinedale Compressor Station expansion at a rate of 0.4 g/hp-hr in 2009, this would result in an increase in hourly NO_x emissions of 54%.[17] Consequently, the increased hourly *total* NO_x emissions would be 11% more than what was modeled for 2009.

The Cumulative Emissions Inventory Did Not Include Sources in Existence as of 2005

The BLM's cumulative emission inventory did not include any sources that were permitted and operating prior to January 1, 2005. AQTSD Volume 2 at G-1. Instead, the BLM assumed that monitoring data reflected all sources in existence as of 2005. The approach of assuming certain sources were reflected in background concentrations is not consistent with current practice for analyzing emissions impacts. Background air monitoring data is generally added to the results of a cumulative source modeling analysis in determining compliance with the NAAQS. However, as discussed in EPA's Guideline on Air Quality Models, if the source being modeled is not isolated, as is the case in this modeling assessment, then modeling of existing sources is necessary to determine the potential contribution of background sources. See Section 9.2.1 of 40 C.F.R. Part 51, Appendix W. Thus, unless the BLM can demonstrate that the impacts of all existing sources are reflected in the monitoring data, and show that the monitoring data are reflective of maximum concentrations in the area and have been properly collected and quality-assured, the BLM cannot use the background monitoring data to reflect all existing sources in or affecting the region and must, instead, inventory and

[17] Following is a calculation for the proposed increase in 2009 (for turbines):
(0.4 g/hp-hr) x (0.0022 lb/g) x (31,000 hp) = 27.28 lb/hr
Total hourly NO_x emissions from the compressor station in 2009 would be:
(27.28 lb/hr) + (11.5 lb/hr - the 2006 increase from IC engines) = 38.78 lb/hr
Compared to the total hourly NO_x emission rate for the Pinedale Compressor Station of 25.2 lb/hr in Table F3.64, this is a 54% increase.

model all existing sources in the project area. This is necessary to meet the BLM's obligation to ensure the scientific validity of this analysis. 40 C.F.R. § 1502.24.

Even if the BLM is somehow able to adequately demonstrate that the background monitoring data reflect all sources in existence in the area as of 2005, these monitoring data could not be used in an analysis of impacts on PSD increments and air quality related values (e.g., visibility). A PSD increment analysis is used to determine how much of the maximum allowable increases (PSD increments) above an established baseline have been consumed in an area. Only emissions from major stationary sources which commenced construction or modification after the applicable "major source baseline date" and emissions increases from minor, area and mobile sources that occurred after the relevant "minor source baseline date" affect the allowable increments.[18] Since an air quality monitor cannot distinguish between pollutant concentrations from sources that are part of the baseline and those from sources that consume increment, it is impossible to use monitoring data to establish compliance with the PSD increments. The BLM's PSD increment analysis only modeled the impact from sources not in existence at the time of the 2005 monitoring baseline (i.e., sources permitted since 2005 and reasonably foreseeable new sources). The resultant concentrations were then compared with the PSD increments. This essentially leaves out all increment consuming emissions that occurred between the time of the applicable regulatory baseline dates and 2005. As presented, the BLM's PSD increment analysis is seriously deficient since it only assesses the emissions changes that have occurred or are expected to occur since 2005. The BLM must prepare an inventory of all emissions changes that have occurred since the major and minor PSD baseline dates and model those changes in emissions to determine compliance with the PSD increments. This same inventory should also be used to determine visibility impacts.[19] The BLM should assess the impacts that the Pinedale Anticline project sources have on nearby (Class II) increments as well as the impacts that the Pinedale Anticline project sources have on PSD increments and visibility in Class I areas considering all other sources that impact the same Class I areas that are impacted by the Pinedale Anticline project. The BLM is required to do this not only to comply with its obligations under the Clean Air Act and the Federal Land Policy and Management Act, but also to comply with its obligations under NEPA to consider the direct and indirect impacts of the action, and its cumulative impacts. See e.g., 40 C.F.R. §§ 1502.2(d), 1508.7, 1508.8. Furthermore, the BLM must base its PSD increment analysis on a comprehensive inventory of sources in order to meet its obligation to ensure the scientific validity of this analysis. 40 C.F.R. § 1502.24.

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[18] The major source baseline dates are January 6, 1975 for SO_2 and PM_{10} and February 8, 1988 for NO_2. 40 CFR 52.21(b)(14)(i). The minor source baseline dates in Wyoming differ by pollutant and were triggered on the date that a complete PSD permit application was received by the WYDEQ, e.g., the minor source baseline date for NO_x was triggered on February 26, 1988. See definitions of "major source baseline date" and "minor source baseline date" in the Wyoming PSD rules.

[19] There is no equivalent "visibility baseline date" since the goal of the visibility program is to restore visibility to "natural conditions". However, the Federal Land Managers typically require that the cumulative visibility analysis be based on all PSD increment consuming sources. See Federal Land Managers' Air Quality Related Values Workgroup Report (FLAG) Phase I Report, December 2000, p. 26.

The Cumulative Emissions Inventory Did Not Properly Account for Sources that Consume the PSD Increments

The state-permitted source inventory appears to take credit for recently permitted emissions reductions that occurred since January 1, 2005. For example, the inventoried NO_x emissions for a permitted decrease in emissions at the Jim Bridger power plant's Unit 2 are -4946 tons per year. AQTSD Volume 2 at G-16. Yet, it is not clear from the BLM's inventory whether these emissions reflect reductions in actual emissions or potential emissions. The BLM can only credit sources for emissions decreases if the sources' emissions are known to be part of the background concentration and only if the decrease reflects actual emissions reductions (not just permitted or potential emissions reductions). Because it is unclear whether these emissions reductions reflect actual or just potential emissions reductions it is possible that the BLM's state-permitted source emission inventory underestimated emissions and, therefore, that the BLM underestimated ambient impacts. The BLM must ensure, and provide information showing, that this is not the case.

As discussed in Part I, the BLM must include emissions from drilling rigs in its PSD increment analysis. These sources cannot be categorized as "temporary" when, collectively, they will operate well in excess of the two years typically considered temporary by EPA, (see, e.g., 43 Fed.Reg. 28394 (June 29, 1978)), much of it in highly compact "concentrated development areas" or "development areas" (depending on whether Alternative B or C is considered) where development will be further limited (especially under Alternative C) to tightly defined areas. SEIS at 2-23 to -36.

The Cumulative Emissions Inventory Did Not Account for All Small Sources in Wyoming

As indicated in the description of the state-permitted source inventory, facilities in Wyoming that are classified as production sites with emissions increases since January 1, 2005 that are less than or equal to 3 tons per year (TPY) were not included in the inventory. Furthermore, only production sites with emissions increases greater than 3 TPY where a single piece of combustion equipment emitted more than 2 TPY were included in the inventory. All other production sites were assumed to be included in Wyoming Oil and Gas Conservation Commission (WOGCC) production estimates. AQTSD Volume 2 at G-3. All other facility types (besides production sites) with emissions less than 1 TPY were also excluded from the Wyoming state-permitted source inventory. There are over 1,000 such sources in Wyoming - mostly production sites - that were excluded from the state-permitted source inventory. Collectively, these sources represent significant emissions of NO_x and, therefore, must be properly accounted for in the BLM's inventory and the resulting impact analyses. As described in our next comment, the WOGCC inventory does not appear to adequately account for these sources.

The Wyoming Oil and Gas Conservation Commission Production Well Estimates Are Incomplete and Appear to Underestimate Emissions

According to the AQTSD, production site emissions estimates were obtained from the state oil and gas permitting authorities (e.g., the Wyoming Oil and Gas Conservation Commission (WOGCC) in Wyoming) for well drilling permits issued between January 1, 2005, and February 1, 2006. Information regarding well type, equipment and field production was used to create a "representative" emission factor, in pounds per well. This average emission factor was then multiplied by the number of wells installed during the January 1, 2005 to February 1, 2006 inventory period in each county within the study area to calculate total well emissions by county. AQTSD Volume 1 at A-11. NO_x emission rates per county are presented in Table G.9 of AQTSD Volume 2. As mentioned above, the state-permitted source emission inventory for Wyoming does not include any production sites with increases in emissions of less than 3 TPY. Rather, the BLM assumed the emissions from these sources were included in the WOGCC inventory. This does not seem possible based on the number of wells permitted in the area during the inventory period. For example, according to the WOGCC website, there were 762 permits to drill issued in Sublette County between January 1, 2005 and February 1, 2006.[20] WOGCC's total NO_x emissions for Sublette County are 0.24 TPY, which would mean that each well emitted, on average, 0.0003 TPY. For the roughly 1,000 production sites excluded from the state-permitted inventory for Wyoming, the average emission rate per well based on WOGCC's total NO_x emission rate for all counties in the study area, would be 0.023 TPY. This emission rate appears to be a factor of 2-4 times less than assumed rates used in other BLM decisions (e.g., the Rawlins Resource Management Plan DEIS assumed an average NO_x emission rate per well for operation, excluding compression, of 0.09 TPY and the Jonah Infill DEIS assumed an average NO_x emission rate of 0.045 TPY per well).[21] The BLM must make sure that all sources that were excluded from the state-permitted inventory are adequately accounted for in the WOGCC inventory. It does not appear that this is the case. It appears that the regional inventory under-predicts NO_x emissions from these sources.

Furthermore, the WOGCC inventory did not include any estimates of PM, VOC or HAP emissions from these production sites. This is a significant oversight to not include these emissions in the regional inventory.

The Cumulative Emissions Inventory Did Not Include State-Permitted Sources of VOCs

The state-permitted source inventory only included sources of NO_x, SO_2 and PM_{10}. It is a significant oversight to fail to inventory sources of VOCs in the region due to the contribution of these compounds to ozone formation. While the scope of these comments

[20] Oil and gas only, 1/1/05 – 2/1/06, see http://wogcc.state.wy.us/CountyApds.cfm?oops=1

[21] See comments on the Jonah Infill DEIS submitted by Vicki Stamper, October 5, 2005, pp.15-16.

does not include the BLM's ozone modeling we do want to comment on this significant deficiency in the inventory.

The Cumulative Emissions Inventory Did Not Include All Reasonably Foreseeable Sources

The regional inventory is incomplete because it did not consider all reasonably foreseeable sources that could significantly impact the same areas that could be impacted by the Pinedale Anticline project sources. The reasonably foreseeable development inventory only included NEPA-authorized projects and not-yet-authorized NEPA projects for which air emissions have been quantified. AQTSD Volume 2 at G-4. The reasonably foreseeable projects inventory should have included all sources recently permitted or which have recently submitted complete PSD permit applications but which are not yet operating, that will have an impact on the same areas impacted by the Pinedale Anticline project sources. For example, several PSD permit applications have been submitted, and some permits have been issued, for coal-fired power plants to be located in areas that could impact the same areas as the Pinedale Anticline development. Coal-fired power plants can often have significant impacts on a Class I area even when located 200-300 km or more away from that area. Specifically, the following power plants were recently permitted or are proposed in the region:

- The Wygen 2 and the recently permitted 100 MW Wygen 3 power plants near Gillette, Wyoming
- The permitted 280 MW Two Elk power plant to be located in the Powder River Basin of Wyoming[22]
- The 385 MW Dry Fork power plant near Gillette, Wyoming (permit application submitted)
- The permitted 780 MW Roundup power plant in southeastern Montana
- The permitted 160 MW Hardin Generating Station, also in southeastern Montana
- The permitted 250 MW Highwood Generating Station near Great Falls, Montana
- The 110 MW Unit 2 at the Bonanza Power Plant in Uintah County in northeast Utah (EPA has recently proposed issuance of a permit)
- The proposed 600 MW power plant in southern Idaho (Jerome County)
- The proposed 520 MW power plant in southeastern Idaho near Pocatello

All of these power plants have the potential to impact the same Class I areas that are impacted by Pinedale Anticline project sources and, therefore, must be considered in the BLM's cumulative analysis. In addition, the BLM must include in the regional inventory any other new or modified sources, other than power plants, proposed in the region.

The regional inventory also failed to include any emissions from NEPA projects in other states that could be impacting the same area as the Pinedale Anticline sources. The NEPA projects listed in Table G.10 of the AQTSD Volume 2 include a listing for Utah and Colorado but indicate there are "no oil and gas projects". In fact, there are several

[22] Although the Two Elk permit expired due to lack of construction, it was reissued in May 2003

NEPA-approved projects in the area with remaining emissions to include in the RFD inventory. These include Vernal (Utah) sources, Price (Utah) RMP sources, Roan Plateau (Colorado) RMP sources, projects in Moffat County, Colorado (Little Snake Field Office) such as the Vermillion Basin Project, and the Powder River Basin (Montana) coalbed methane sources. The remaining development in the many NEPA-approved projects in these areas should have been included in the RFD table of NEPA projects (Table G.10).

VOC emissions estimates were not included for any NEPA projects in Table G.10, and those emissions can be quite significant. For example, the BLM estimated that the total annual production emissions of VOCs from the Jonah Infill project alone would be over 11,000 TPY.[23] Thus, the reasonably foreseeable development inventory is incomplete and therefore underestimates cumulative air quality impacts in the region.

The Monitored Background Concentrations For NO_2 and $PM_{2.5}$ May Not Be Representative of Maximum Background Concentrations in the Area

The BLM presents the ambient background concentrations used in the air quality impacts analyses in Table 3.1 of the AQTSD. Considering that direct project $PM_{2.5}$ concentrations and cumulative NO_2 concentrations in the Pinedale Anticline project area are predicted to be relatively close to the NAAQS/WAAQS, it is imperative that appropriate background concentrations be determined so that the public can be assured that the Pinedale Anticline project, by itself and/or with other existing and projected emission sources in the region, will not result in violations of the health and welfare based ambient air quality standards.[24]

The BLM relied on background data collected in 2005 in Pinedale, Wyoming to reflect the maximum background concentration of $PM_{2.5}$ in the Pinedale Anticline project area and in the Class I areas of concern. The 24-hour average background concentration in Table 3.1 for $PM_{2.5}$ is 15 $\mu g/m^3$, collected in Pinedale, Wyoming between July 2005 and June 2006. According to EPA's AirData website at http://www.epa.gov/air/data/index.html, the maximum 24-hr value recorded in 2006 at the Pinedale site was 39 $\mu g/m^3$ and the 98th percentile 24-hour average concentration was 18$\mu g/m^3$. In 2005, the maximum 24-hour value recorded was 24 $\mu g/m^3$ and the 98th percentile 24-hour average concentration was also 24 $\mu g/m^3$. Given the fact that a slightly higher background concentration (i.e., 7-16% higher) would result in 24-hour $PM_{2.5}$ NAAQS violations, it is important that the BLM explain why it did not use the maximum observed 24-hour concentration from either 2005 or 2006 as the representative maximum background concentration in the area. The concentration that is most reflective of the sources in question should be determined by evaluating "the

[23] Air Quality Technical Support Document, Jonah Infill Drilling Project, Table 2.3

[24] See Tables M-5 and M-29 in Appendix M. Maximum modeled near-field 24-hr $PM_{2.5}$ concentrations from direct project sources are 84% of the NAAQS/WAAQS and maximum modeled cumulative in-field 24-hr $PM_{2.5}$ concentrations for the No Action alternative are 93% of the NAAQS/WAAQS. Maximum modeled cumulative in-field annual NO_2 concentrations for the Proposed Action alternative are almost 70% of the NAAQS/WAAQS.

meteorological conditions accompanying the concentrations of concern." See 40 C.F.R. Part 51, Appendix W, § 9.2.2. It is possible that the maximum concentrations measured at Pinedale should be used as background for 24-hour $PM_{2.5}$ concentrations. If not, then the BLM must disclose its evaluation as to why 15 $\mu g/m^3$ is more representative of the maximum background concentrations in the area.

Similarly, the BLM relied on background data collected in 2005 in Boulder, Wyoming to reflect the maximum background concentration of NO_2 in the Pinedale Anticline project area and in the Class I areas of concern. The annual average background concentration in Table 3.1 for NO_2 is 8 $\mu g/m^3$, collected approximately five miles southwest of Boulder, Wyoming between April 2005 and March 2006. Another NO_2 monitor is also located nearby in the Jonah field. The Jonah monitoring site is an industrial site 40 miles northwest of Farson, Wyoming and is classified in part as a "general background" monitor. According to EPA's AirData website at http://www.epa.gov/air/data/index.html, the annual arithmetic mean concentration in 2006 at this site was 0.015 ppm, or 28 $\mu g/m^3$. Given the fact that a background concentration this high would result in annual NO_2 concentrations from the BLM's analysis of the Pinedale Anticline project and other regional sources that is almost 90% of the NAAQS, it is important that the BLM carefully evaluate which monitor is more representative of the maximum background concentrations in the area. Considering the fact that the BLM has potentially greatly underestimated NO_x emissions from Pinedale Anticline project sources, the use of a higher background concentration could result in impacts from the proposed development that would threaten compliance with the NAAQS for NO_2.

As a result of the deficiencies described in Part II of our comments, it is likely that air quality impacts would be predicted to be more severe than what was presented in the draft SEIS. Considering the fact that the BLM's analysis already shows visibility impairment, increment violations and threatened NAAQS and none of the proposed alternatives are sufficient to mitigate these predicted air quality impacts, we do not support the proposed project under any of the BLM's development alternatives.