United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Rawlins Field Office
1300 North Third Street
P.O. Box 2407
Rawlins, Wyoming 82301-2407

In Reply Refer To:

1790

July 29, 2002

Re: Blue Sky Pod Coalbed Methane Project

Dear Reader:

We are providing you a copy of the enclosed Decision Record for your information and use. This document identifies our decision regarding the Blue Sky Pod Project and explains the rationale for reaching the decision. Included with this document are the applicant-committed environmental practices and protection measures and additional mitigation requirements for the implementation of this project.

On January 24, 2002, we released the *Environmental Assessment for the Atlantic Rim Coalbed Methane Project, Blue Sky Pod.* The environmental assessment was prepared in order to satisfy the requirements of the National Environmental Policy Act, other regulations, and statutes to fully disclose the potential environmental impacts of the alternatives (Proposed Action and No Action) and to solicit public comment on them. The assessment also identified additional mitigation measures to further reduce potential impacts.

A copy of this decision has been sent to governmental entities, individuals, and organizations who commented on this project. We wish to thank individuals and organizations who provided input throughout this analysis.

If you have any questions regarding this decision or need additional information, please contact Brenda Vosika Neuman, Project Lead, at the address shown above or phone (307) 328-4389.

Sincerely,

Kurt J. Kotter

Field Manager

Enclosure

DECISION RECORD AND FINDING OF NO SIGNIFICANT IMPACT FOR THE ATLANTIC RIM COALBED METHANE PROJECT BLUE SKY POD EA

INTRODUCTION

Petroleum Development Corporation (PEDCO) of Gillette, Wyoming, has notified the Bureau of Land Management (BLM), Rawlins Field Office, that the company proposes to explore and potentially develop coalbed methane (CBM) wells in the Blue Sky Project Area (project area) of the Atlantic Rim Project Area (ARPA) of southcentral Wyoming. The Blue Sky proposal is part of the exploration drilling activities under consideration for the acquisition of data necessary to prepare the Environmental Impact Statement (EIS) within the ARPA.

Because of the length of time necessary to complete the EIS, the operators asked the BLM to consider allowing some exploration drilling within the ARPA. On June 1, 2001, an Interim Drilling Policy (IDP) was sent to all operators participating in the proposal to develop CBM resources in the ARPA. The IDP was prepared by the Rawlins Field Office EIS Interdisciplinary Team, with recommendations from the BLM's Reservoir Management Group. The IDP was developed as a way to manage interim activities concurrently with EIS preparation. The IDP states that, prior to the development of any exploration activity, an environmental assessment will be prepared for all pods developed on federal acreage. Interim drilling activities will be monitored by the BLM to ensure that such activities do not significantly affect the environment or prejudice decisions to be made as a result of the analysis to be conducted in the ARPA EIS.

This interim development project consists of drilling, completing, and producing a total of 23 exploratory CBM wells, 2 injection wells, access roads, a compressor station, and other related production and water disposal facilities in the project area. All 23 of the proposed well sites are located on surface lands administered by the BLM. A total of 19 of the proposed wells would develop federal minerals. The remaining four proposed wells would develop state minerals. One existing well, S&W State 1-16, will also be tied into the project. This well is located on lands under BLM surface ownership and State of Wyoming mineral ownership. The project area encompasses approximately 1,921 acres. The life of the project is estimated to be 10 to 20 years.

The project area is located about 18 miles northeast of Baggs, Wyoming, in the Muddy Creek watershed within the Colorado River Basin System, and several miles outside of the Baggs Elk Crucial Winter Range Area. The historic Cherokee Trail, a western travel route dating from the 1800s, is located several miles to the south, outside the project area.

Access to the project area is by State Highway (SH) 789 and Carbon County Road 608 (Dad Road). From Creston Junction travel about 20 miles on SH 789 to the intersection of Dad Road and head east on this road about six miles to reach the project area.

ALTERNATIVES CONSIDERED

The *Environmental Assessment* (EA) *for the Atlantic Rim CBM Project, Blue Sky Pod* analyzed two alternatives. The Proposed Action considered CBM activities to occur on federal lands. Under the Proposed Action, 23 wells would be drilled on federal lands administered by the BLM. The proposed CBM development is based on a Wyoming Oil and Gas Conservation Commission (WOGCC) approved 80-acre

well spacing pattern. In addition to well sites, other facilities, such as access roads, gas gathering and water disposal pipelines, electrical utilities, and compressors, would be developed to facilitate natural gas (methane) production in the well fields. The interim project would develop over a 6 to 12 month period. The productive life of the project is estimated between 10 and 20 years. Each well would be production tested continuously for a period of 6 to 12 months to evaluate the commercial feasibility of producing CBM from coals in the Almond and Allen Ridge Formations of the Mesaverde Group.

Under the No Action Alternative, the BLM analyzed the impacts associated with one approved CBM well located on federal surface/state mineral land, an existing well access road, and denial of any further development of federal lands associated with this project. This alternative provides a benchmark, enabling the decision-maker to compare the magnitude of the environmental effects of the alternatives.

No other alternatives were considered because, in order to prevent significant impacts to the environment, the IDP limits the placement of CBM exploratory activities to areas where sensitive resources do not exist. Exploration activity was centered where the best geologic and hydrologic information could be obtained outside of these sensitive resource areas.

DECISION

Based upon the analysis of the potential environmental impacts described in the *Environmental Assessment* (EA) *for the Atlantic Rim Coalbed Methane Project, Blue Sky Pod,* and in consideration of the public, industry, and governmental agency comments received during the environmental analysis process, the BLM approves the Proposed Action as described in Chapter 2 of the EA and associated errata (see Appendix A) for the drilling and construction of 23 CBM wells and associated facilities within the project area. The decision incorporates the Project-Wide Mitigation Measures and Procedures identified in Appendix C, as modified, and the Conditions of Approval described in Appendices D and E.

APPROVED PROJECT COMPONENTS

The decision authorizes the initiation of permit approvals for the following project components on BLM-administered federal lands and/or minerals within the project area, subject to the requirements identified in Appendix C, as modified, and Conditions of Approval described in Appendices D and E.

- Development of 23 CBM wells located on federal lands within the project area with an initial total disturbance of 28.8 acres and a life-of-project (LOP) disturbance of less than 5.8 acres.
- Development of two new injections wells with an initial disturbance of 2.0 acres and LOP disturbance of 2.0 acres.
- Construction of new access roads and facilities associated with CBM development including gas gathering pipelines, water discharge lines, and power lines that will be buried parallel to road rights-of-way. Estimated initial disturbance is 34.9 acres with a LOP disturbance of 17.8 acres.
- Upgrade of an existing road resulting in an initial and LOP disturbance of 2.8 acres.
- Construction of new a sales pipeline resulting in an initial disturbance of 3.1 acres. The line would be wholly reclaimed resulting in LOP disturbance of 0 acres.
- Construction of a compressor site with an approximate disturbance area of 1.5 acres.

- Construction of four water transfer pumping facilities with an approximate total disturbance area of 4.0 acres.

APPROVAL OF THE PROPOSED ACTION IS CONDITIONAL UPON THE FOLLOWING:

- Implementation of the project-wide mitigation measures and procedures as described in Appendix C.
- Adherence to the Conditions of Approval described in Appendices D and E.
- Adherence to oil and gas lease and right-of-way grant stipulations.

RATIONALE FOR THE DECISION

The decision to approve the operator's proposed development was based on the following factors: 1) consistency with the land use and resource management plans; 2) national policy; 3) agency statutory requirements; 4) relevant resource and economic considerations; 5) application of measures to avoid or minimize environmental harm; 6) finding of no significant impact; and 7) public comments.

1. Consistency with Land Use and Resource Management Plans

The Proposed Action is in conformance with the overall planning direction for the area. The objective for oil and gas management decisions described in the Great Divide Resource Management Plan, 1990, is to "provide opportunity for leasing, exploration, and development of oil and gas while protecting other resource values." The project also meets the objectives of the Lands Program which is to "support the goals and objectives of other resource programs for managing the BLM administered public lands and respond to public demand for land use authorizations."

2. National Policy

Private exploration and development of federal oil and gas leases is an integral part of the BLM oil and gas leasing program under the authority of the *Mineral Leasing Act of 1920* and the *Federal Land Policy and Management Act of 1976*. The United States continues to rely heavily on foreign energy sources. Oil and gas leasing is needed to encourage development of domestic oil and gas reserves to reduce the United States's dependence on foreign energy supplies. Therefore, the decision is consistent with national policy.

3. Agency Statutory Requirements

The decision is consistent with all federal, state, and county authorizing actions required to implement the Proposed Action. All pertinent statutory requirements applicable to this proposal were considered, including informal consultation and informal conferencing with the U.S. Fish and Wildlife Service.

4. Relevant Resource and Economic Considerations

Environmental impacts from the pilot project to resources identified in the EA are minor and all deemed acceptable. The economic benefit is important due to the tax revenues generated from the development of natural gas.

5. Application of Measures to Avoid or Minimize Environmental Harm

Federal environmental protection laws such as the *Clean Air Act,* the *Clean Water Act,* and *the Historic Preservation Act* apply to all lands and are included as part of the standard oil and gas lease terms. The adoption of the mitigation and monitoring measures identified in Chapters 2.0 and 4.0 of the project EA and contained in this Decision Record in Appendix C, and the Conditions of Approval found in Appendices D and E, represent practicable means to avoid or minimize environmental impacts.

6. Finding of No Significant Impact

Based upon the review of the EA, the BLM has determined that the Proposed Action, with implementation of the protective measures identified in Appendix C and Conditions of Approval identified in Appendices D and E herein, would not cause a significant impact to the quality of the human, natural, and physical environment. Therefore an Environmental Impact Statement is not necessary.

7. Public Comments

Thirteen comment letters were received on the EA during the 30-day comment period that ended February 28, 2002. The following is a list of those responding to the request for public comment.

Office of Federal Land Policy
- Wyoming State Engineer's Office
- Office of State Lands and Investment
- Wyoming Game and Fish Department
- Wyoming Business Council

United States Geological Survey
Oregon-California Trails Association
Petroleum Association of Wyoming
United States Fish and Wildlife Service
United States Department of Agriculture-Forest Service
National Wildlife Federation
Rocky Mountain Energy
Biodiversity Associates

The substantive comments are summarized and BLM's responses are found in Appendix B.

APPEAL

This decision is subject to appeal. Under BLM regulation, this decision is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of this decision must include information required under 43 CFR 3165.3(b)(State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, P.O. Box 1828, Cheyenne, WY, 82003 within 20 business days of the date this Decision Record is received or considered to have been received.

Kent L. Kotter
Field Manager

July 29, 2002
Date

APPENDIX A

MODIFICATIONS AND CORRECTIONS TO THE BLUE SKY POD PROJECT ENVIRONMENTAL ASSESSMENT

APPENDIX A

ERRATA
MODIFICATIONS AND CORRECTIONS
TO THE
ATLANTIC RIM CBM PROJECT

BLUE SKY POD
ENVIRONMENTAL ASSESSMENT

Chapter 2 - Proposed Action and Alternatives

Page 2-1, Table 2-1, CBM Wells, change lease number WYW-146499 to WYW-148481.

Drilling and Completion Operations

Page 2-5, remove paragraph 2, and insert, "No oil or other oil-based drilling additives, chromium/metals-based muds, or saline muds will be used during drilling of these wells. Only freshwater, biodegradable polymer soap, bentonite clay, and non-toxic additives will be used in the mud system."

Resource-Specific Requirements - Air Quality

Page 2-13, change requirement 2, sentence 2, to read, "Prior to any flaring, WDEQ-AQD would be notified as required by Wyoming Air Quality Standards and Regulations, Chapter 1, Section 5, *Reporting Guidelines for Well Flaring and Venting.*"

Resource-Specific Requirements - Water Resources

Page 2-15, change requirement 13, sentence 3 to read,"Prior to discharge a General Permit Authorization of Temporary Discharge will be obtained from WDEQ/WQD, which establishes pollutant limits. Discharged water may need to be treated, filtered, or suspended particles settled, to meet the criteria established in the permit."

Resource-Specific Requirements - Wildlife

On page 2-17, change requirement 10 to read as follows, "For the protection of livestock and wildlife, all pits and open cellars shall be fenced. Fencing shall be in accordance with BLM specifications. Netting shall be placed over all production pits to eliminate any hazard to migratory birds or other wildlife. Netting is also required over reserve pits which have been identified as containing oil or hazardous substances [CERCLA Section 101(14)] as determined by visual observation or testing. The mesh diameter shall be no larger than one inch."

Resource-Specific Requirements - Noise

Please add the following mitigation to page 2-21. "The BLM will require that noise levels be limited to no more than 10 dBA above background levels at greater sage-grouse leks located on public lands. In order to comply with the above noise level limits, the BLM will require that compressor engines located on public lands be enclosed in a building and located at least 600 feet away from sensitive receptors or sensitive resource areas.

No Action Alternative

Page 2-21, lines 3 and 4 under this title should read, “An estimated 1.35 acres in the project area have been disturbed by existing CBM drilling activities.”

Big Game - Elk

Page 3-22, line 6, add the following after the reference to Porter, 1999, “However, only a few elk locations in Porter’s study were recorded on Wyoming spring and fall ranges near Muddy Mountain and Brown’s Hill.”

Range Resources and Other Land Uses

Page 4-34, paragraph 1, cumulative long-term disturbance should be 452 acres rather than 451 acres.

Consultation and Coordination

Page 5-2, add the United States Department of Agriculture, Forest Service, to the list of federal offices that provided comments or were provided the opportunity to comment.

APPENDIX B

SUMMARY OF EA COMMENTS AND BLM RESPONSES

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SUMMARY OF EA COMMENTS AND BLM RESPONSES

The EA was released for a 30-day public review period on January 24, 2002. Thirteen comment letters were received on the EA. The letters have been reviewed to determine whether the information they provided would warrant a determination other than a Finding of No Significant Impact (FONSI). Substantive comments with responses are summarized below (*in italics*) with BLM responses to each immediately following the comment. The BLM would like to thank all commentors for taking the time to review the EA and provide comments.

1. Wyoming Game and Fish Department (WGFD)

a. *Concerning the Affected Environment section, Porter (1999, page 39) found that nearly all elk collared in the winter on Powder Rim moved to the Elkhead Mountains in Colorado during the summers. Only a few elk locations in Porter's study were recorded on Wyoming spring and fall ranges near Muddy Mountain and Brown's Hill.*

This information has been added to the text, please see Appendix A of this Decision Record.

b. *Although we have not done specific studies to document mule deer migration routes in the project area, Porter (1999) presents data suggesting deer move through or near the project area. This information should be included in the EA.*

Based on current information, major mule deer migration routes are not known to pass through the project area (page 3-22 of the EA). However, it is likely that mule deer utilize areas in and surrounding the project area, and page 3-22 of the EA identifies the area as winter/yearlong range for mule deer. Porter's study indicates that mule deer migration corridors may potentially occur near the Blue Sky Pod; however, the study is not specific enough to determine the exact locations of these corridors and if they pass through the project area.

c. *The Environmental Consequences section on page 4-11 assumes that animals displaced from impacted habitats can move to adjacent habitats and thus there is no impact. This conclusion assumes adjacent habitats are suitable, available, and unoccupied.*

Total initial disturbance from this project is projected at 78.5 (4%) acres of the available habitat within the 1,921-acres project area. Because this disturbance is dispersed throughout the project area, it is unlikely that all of one type of habitat would be removed. We don't know the use patterns of available habitat, or for that matter, the location of all occupied habitat. However, as stated on page 4-13 of the EA, the project area represents less than one-tenth of a percent of any species' winter or year long range. Even when the disturbance from the Blue Sky Pod project is added to disturbance from other uses, it is unlikely that a considerable portion of available habitat will be utilized.

d. *The EA says wildlife mortality due to the construction of the well pad and traffic accidents would be expected but quantification of these forms of mortality is not possible. While mortality from the construction phase is not easily detected, animals killed by the increased traffic could be easily quantified with carcass counts along roads.*

The discussion on page 4-12 of the EA was meant to state that, at this time, we can make no prediction of actual numbers of mortality from project-related accidents. Counting the carcasses along project area roads would quantify wildlife mortality, but would not necessarily accurately reflect the amount of mortality related specifically to the construction of this project since there are other users in the area.

e. *The EA explains that, due to the high reproductive potential of small bird and mammal species, populations in reclaimed areas would quickly rebound to predisturbance levels. The EA should note that this is not the case if the disturbed vegetation was a later seral stage vegetative community (e.g., sagebrush) that may take 20-30 years to re-establish to predisturbance levels.*

The species populations will likely rebound; however, vegetative disturbance may not. Because the 78.5 acres of vegetative disturbance is dispersed over a 1,921-acre project area, it is anticipated the implementation of this project is likely to have little affect on small birds and mammals which are relatively mobile and propagate quickly. See response to 1c above.

f. *On page 4-13, the assumption is made that if seasonal closures are applied to this area it would reduce poaching and harassment of big game. While this is true, it should be noted that the addition of new roads into an area could also increase poaching and harassment on a big game winter range as the new road allows easy access to the location and seasonal closures are hard to enforce. Also, seasonal closures are only applicable during the development phase of a project and no protection is afforded to big game winter ranges while the field is in the* ***production phase.***

Because County Road 608 provides direct access to the project area, the development of new roads are limited in general to spur roads used to access the well area. The lack of new through roads from this project would likely keep traffic levels near current use. After the project begins operations, stated on page 2-8 of the EA, each well location would be visited about every other day to check wells and roads. This is considered to be casual use and is no different than the recreationists who utilize the area. No noticeable effects are anticipated as long as the project-wide mitigation measures described in the EA and the Interim Drilling Policy are implemented.

It is incorrect to state that mitigation measures do not extend for the life of the project. All federal, state, and local laws, mitigation described in the RMP, Chapters 2 and 4 of the EA, and the COAs described in Appendices D and E of this Decision Record will be applied as necessary throughout the life-of-project. See response to 10o.

g. *Statements in this document claim that only the drilling stage will displace hunters. However, some hunters will not hunt in an active gas field where activity disturbs animals and where there may be safety concerns with shooting in the presence of gas wells. This may alter the outdoor experience. An economic analysis of lost AUMs is presented on page 4-22 and, although difficult to quantify, the EA should at least qualitatively address the potential economic impact of displaced hunters and wildlife.*

As stated in the EA on page 4-37, there are no historical statistics of use by hunters and other recreationists in the area. There may be some impact to hunters who traditionally use the area for hunting purposes; however, the hunt area for all three big game species is quite large and implementation of the project is unlikely to stop hunters from utilizing the designated hunt area for all three species.

h. *In the Cumulative Impacts section on page 4-33, the description of prescribed burns is vague. It lists 20,000 acres of prescribed burns and 4,000 acres of burns caused by wildfire in the past 15 years, out of a total of 500,000 acres around the project area. The burn patterns and stages of recovery are noted, but not quantified. Without quantification, this section is incomplete. Total acres listed in the affected area assume that all are of the same age class and species, which is not the case. The total amount of each habitat type burn should be compared to the total amount of like habitats in the area (e.g., greasewood). Roads and bare ground would not be treated with fire and should be removed from the total. This analysis should be clearly defined and include an area large enough to include seasonal ranges of big game animals and upland birds.*

The purpose of this section is to give the reader an idea about the types of activity in the area that might effect wildlife habitat. We are aware that the WGFD has concerns about the loss of habitat from prescribed burns. Analysis of the impact of prescribed burns is outside of the scope of this EA. The areas where prescribed burns have occurred are not barren, they contain vegetation and provide habitat for various species. This is different than oil and gas operations where the vegetation will be removed from the surface. Those areas of disturbance are described in the EA beginning on page 4-28. It is estimated that exploratory development in the Atlantic Rim area will have an initial disturbance of 650 acres, which includes new roads and water and gas flowlines. The purpose of the analysis is to determine the impacts that might result from the disturbance of 650 acres (reasonably foreseeable development) within the 310,000-acre Atlantic Rim area when added to past and current activities (oil and gas, ranching, and prescribed burns). The analysis in the EA, provided the implementation of mitigation measures described in Chapter 2 of the EA, RMP provisions, stipulations, interim drilling guidelines, seasonal closures, and reclamation measures specified by BLM are followed, indicates that no noticeable effects on wildlife populations are anticipated. Currently a study is proposed, "Cumulative Impact Analysis for Shrublands in Southeast and South Central Wyoming," the goal of which is to comprehensively catalogue impacts to shrub communities from all activities. This study, as well as those which will be completed while preparing the Atlantic Rim Coalbed Methane EIS, should help to understand the cumulative impacts resulting from various activities.

i. *Page 4-34 stated that 95% of the prescribed burns occur in mountain and basin big sagebrush and lists Wyoming big sagebrush as the only type of sagebrush big game and sage grouse use as habitat. This is not accurate. Big game use the taller mountain and basin big sagebrush for hiding cover, and tall sagebrush is sometimes the only vegetation available for big game and greater sage-grouse during winters with deep snows.*

The discussion on page 4-34 states that the Wyoming big sagebrush is the "main" forage for big game and the "main" habitat for greater sage-grouse. It is acknowledged that species may utilize different vegetation at times.

j. *On page 4-35 an incorrect statement is made about prescribed burns not impacting sage grouse as the fires are outside of the range typically used by nesting and brood rearing sage grouse. The EA also notes there is a vast amount of nesting habitat is available although the document indicates there are no figures on the exact amount of habitat available. Without adequate backup information this statement should be deleted.*

The analysis of prescribed burns is outside of the scope of this EA. The focus of the EA is to determine if impacts (individually or cumulatively) may occur from the implementation of this project. No active leks are located within the project area, although suitable habitat exists. Within the Atlantic Rim area, exact greater sage-grouse habitat figures have not been

identified; however, page 4-35 of the EA states that, within the Baggs Habitat Management Plan area, 160,500 acres of greater sage-grouse habitat were identified. The plan area was referenced because, in general, it overlaps the Atlantic Rim Coalbed Methane project area and was the best available information.

k. *On page 4-35, big game species are said to not be impacted long-term as they will eventually habituate after the drilling stage is completed. While the well sites themselves will not permanently disturb elk, the activities related to well maintenance would continue to disturb elk and other big game species. Elk avoid human activities when they are hunted and research has revealed that elk will avoid roads and human activity.*

There may be some impact to elk from maintenance activities but, because these activities are generally of a casual use type, the impacts are anticipated to be similar to those resulting from use of the area by hunters and other recreationists.

l *We are concerned with hydrostatic test water. The expected volumes and timing of release should be stated. The document does not mention potential contaminants which may be contained in this discharge. This would be critical if testing discharges were to ultimately end up in Muddy Creek. We suggest that hydrostatic discharge be monitored to detect pollutant levels and potential soil erosion.*

The EA states on page 2-15 that, prior to discharge, hydrostatic test water will be treated or filtered to reduce pollutant levels if necessary. Preceding discharge of this water, activities will be coordinated with BLM and WDEQ/WQD, and all necessary permits will be approved.

2. Wyoming State Engineer's Office

a. *While the project proponents did not acknowledge the necessity of obtaining permits from the State of Engineer's Office to appropriate groundwater, a check of the records revealed that permits to appropriate groundwater for each of the proposed coalbed methane wells have been obtained from this office. However, none of the permits make any reference to beneficial use of this water. Permits may be required from this office for any use beneficial for any other project purposes such as hydrostatic testing of pipelines, well drilling, etc.*

Per page 2-15 of the EA, hydrostatic test water used in conjunction with pipeline tests and all water used during construction activities would have appropriation permits approved by the State of Wyoming.

b. *The EA did not make it clear where water to drill the initial CBM well will be obtained.*

The operator intends to obtain water to drill the initial well from its Sun Dog Pod operation. All of these wells have been permitted through the State Engineer's Office.

3. Petroleum Association of Wyoming (PAW)

a. *The applicant has agreed to numerous "Applicant-Committed Measures" which go beyond the required protective measures established in the current land management plan. These measures are voluntary actions agreed to by the individual company and should not establish the precedent for future projects that are similar in nature.*

The project-wide mitigation measures and procedures identified in the Blue Sky EA are actions or features which are included as part of the Proposed Action that could be taken to avoid or reduce projected impacts or reflect standard operating procedures identified by the BLM. Once the measures as described in Chapter 2 become part of the decision, they are considered enforceable actions that will be implemented, where applicable, to reduce impacts to the environment resulting from the project.

b. *Page 2-10 states, "These measures and procedures will be referred to as Best Management Practices (BMPs) throughout this document." PAW requests clarification regarding the differences between "applicant-committed measures" and "Best Management Practices" and the reason for the change in terminology by the BLM.*

The term "applicant-committed measures" is not entirely correct. The project-wide mitigation measures and procedures discussed throughout the document consists of both applicant-committed and agency-required measures. The use of the term Best Management Practices was defined to reflect the description of both procedures.

c. *Page 4-15 of the EA states that no mountain plover were found during the 2001 surveys; however, the presence of prairie dog towns indicates that plovers may use these areas at times. The status of the mountain plover as "proposed for listing" allows for a certain amount of flexibility in developing measures protective of the species. If mountain plover are identified in the project area, BLM has certain discretionary authority and should consider the effects on the oil and gas operator as part of its adoption of reasonable and prudent measures necessary to minimize the impact on the mountain plover.*

If drilling activities occur in areas identified as mountain plover habitat, the operator must adhere to any stipulations or conditions of approval placed on the Application for Permit to Drill.

d. *Page 4-17 of the EA it states that the BLM may limit noise levels to no more than 10 dBA above background levels at greater sage-grouse leks and other sensitive resources. There is no mitigation in the RMP regarding noise and its effect on sage grouse leks; however, there is an ongoing effort between BLM and Wyoming Game and Fish Department to monitor the possible effects noise may have on the species during seasonal times of the year. PAW recommends that BLM remain flexible with noise mitigation while those studies are being conducted and the mitigation should be adjusted based on those studies.*

Research on noise levels affecting greater sage-grouse is presently ongoing. The 10 dBA standard was established as mitigation in the Pinedale Anticline EIS. The research presented in the noise technical analysis report prepared for the EIS indicated that an oil and gas rig would have to be located a minimum of 800 feet away from a greater sage-grouse lek, and a typical-sized (26,000 horsepower) compressor station would have to be located approximately 2,500 feet away from the lek, unless mitigation is applied. We are currently trying to obtain the latest research information available but, until further studies are complete, we will use the results from the studies conducted for the Pinedale Anticline EIS as a guide and will mitigate noise levels of authorized actions to increases of more than 10 dBA above background levels at the edge of greater sage-grouse leks.

4. Rocky Mountain Energy (RME)

a. *RME supports the BLM's treatment of private lands in this document. The BLM's statements that mitigation measures would be applied to privately-owned surface unless the involved private surface owners specifically require alternate actions, appropriately recognizes private property rights. Furthermore, the "Applicant-Committed Measures" are voluntary actions agreed to by PEDCO and BLM. They should not establish precedent for future actions that are similar in nature.*

Please refer to response 3a above.

b. *Page 2-13 of the EA, requirement No. 2 states, "Any flaring would be conducted under the permitting provisions of Section 13 of the Wyoming Air Quality Standards and Regulations." The WDEQ-AQD does not issue permits for flaring. Under the AQD's "Reporting Guidelines for Well Flaring and Venting," all that is required is notification of events. Additionally, the correct citation for the AQD's notification requirements are found in Chapter 1, Section 5.*

The correction has been made, see Appendix A, of this Decision Record (DR).

c. *Page 2-15, requirement No. 13, says the operator would be required to "treat or filter the water to reduce pollutant levels or to settle out suspended particles if necessary." RME would like to bring to the BLM's attention WDEQ's General Permit Authorization of Temporary Discharge under NPDES. This general permit authorizes disposal of hydrostatic test water and has established limits for various potential pollutant levels. The potential pollutant limits that are established in the general permit should guide the operator when discharge water is to be treated or filtered.*

This information has been added to the discussion. Please see Appendix A

d. *Page 2-16 states that the operator is to coordinate all crossings or encroachments of water of the U.S. with the Army Corps of Engineers (COE). In 1998, the Wyoming Regulatory Office issued General Permit 98-08. The permit is for the discharge of fill material associated with oil and gas exploration and development activities. It allows for verification by the BLM of applicability of the general permit with subsequent notice to COE after completion of activities. RME suggests that this section be rewritten to acknowledge the existence of GP 98-08 and the BLM's role.*

The BLM acknowledges the presence of the GP 98-08 programmatic permit, and BLM has the authority to make decisions based on the permit on lands under its jurisdiction.

e. *Page 2-17 states that the operator will eliminate any hazard to migratory birds or other wildlife by requiring netting over any pits identified as containing oil or toxic substances. RME suggests that the BLM provide a definition based upon applicable, existing law regarding what it will consider to be toxic substances.*

We agree that the term "toxic substance" may not be the appropriate term. As opposed to "toxic substances," for which a definition is hard to pin down, "hazardous substances [CERCLA Section 101(14)]" has a more definable and regulatory definition. The terminology has been amended from "toxic substances" to "hazardous substances." See Appendix A of this DR. Because the definition for "hazardous substances" does not include or entirely encompass oil specifically, the term "oil or" must be retained in the mitigation.

f. *The discussion on page 3-17 regarding the Groundwater Suitability Standards is partially misconstrued. The purpose for establishing suitability limits for SAR of 8 and sodium carbonate of 41 meq/l is to protect the ambient conditions for that associated class of groundwater (Class II Agricultural). While DEQ has chosen to protect Class II groundwater at the stated standard, it has not stated that anything above the standards is unusable for agriculture. Irrigation can successfully take place with water that exceeds the stated standard. This is reflected in DEQ's Surface Water Quality Standards, Chapter 1. Numeric limits for irrigation suitability are not established, rather a narrative standard is used which takes into consideration multiple interactions such as soils, crops, and irrigation practices. Although it is understood that produced water will be reinjected and therefore the significance of irrigation suitability is moot, the BLM should more fully analyze existing DEQ water quality standards.*

Information presented on page 3-17 is not intended as an analysis of the potential impacts to soils from the discharge of groundwater containing a high SAR value. It is for information purposes only. The document correctly states that the calculated SAR and residual sodium carbonate exceeds the Wyoming Department of Environmental Quality standards as described under the *Water Quality Rules and Regulations: Chapter VIII: Quality Standards for Wyoming Groundwater*. High sodium water may produce harmful levels of exchangeable sodium in most soils and will require special management; however, because the groundwater will be re-injected and, due to the lack of irrigated lands in the area, the significance of elevated SAR values in this project area is not pertinent.

g. *The mitigation outlined on page 4-4 for the protection of air quality includes the reduction of compression requirements and installation of electric compression. Should the BLM chose to impose either of these restrictions, the analysis needs to document impacts to the recovery of the resource from reduced compression and additional environmental impacts caused by the electrification of compressor stations.*

Although it is unlikely that a situation would exist where the BLM would require reduction in compression requirements to protect air quality values, the implementation of this mitigation would result in a reduction of impacts. If electrical compression were utilized, per the Interim Drilling Policy, all power lines to the station would need to be buried in existing ROWs. No additional impacts are anticipated.

h. *The mitigation on page 4-17 states that the BLM may require noise levels be limited to no more than 10 dBA above the background levels at greater sage grouse leks. RME recommends that the BLM remain flexible with noise mitigation until the completion of noise studies between BLM and Wyoming Game and Fish. Mitigation should be adjusted based on the data resulting from those studies.*

Research on noise levels affecting greater sage grouse is presently ongoing. We are currently trying to obtain the latest research information available, but until further studies are complete, we will use the results from the studies conducted for the Pinedale EIS as a guide, and will mitigate noise levels of authorized actions to increases no more than 10 dBA above background levels at the edge of greater sage-grouse leks. See response to 3d above.

5. United States Geological Survey

a. *The last paragraph on page 3-17 states, "Unless the water were mixed with an existing water source of lower sodium and bicarbonate and lower total salinity, irrigation would result in reduction in infiltration in the affected soil." The following paragraph states, "The confining beds slow the movement of water, and hence movement of potential contaminates between aquifers." Apparently, these sentences are unrelated and may be out of place. The USGS suggests that the text between pages 3-17 and 3-19 be re-examined for unity and coherence, and placed in the appropriate part of the EA.*

The first sentence describes the impact that produced water with a high SAR could have on soils and the ability to irrigate if it were discharged to the surface. The second sentence refers to any water discharged to the surface that percolates into the groundwater system. The discussion is purely informational as all of the produced water associated with this project will be reinjected.

6. Oregon-California Trails Association

a. *From the documentation received, it does not appear that the proposed project impacts either the Overland or Cherokee Trails. However, it would be appreciated if you would confirm this by providing a BLM map on a scale of 1:100,000 with the location of the pod in relation to the trails designated.*

The information you requested is not available on a map of this scale, but neither trail is located near the project area.

7. United States Fish and Wildlife Service

a. *We have received the letter from your office dated February 15, 2002, that included the Threatened & Endangered Conference/Consultation and Biological Evaluation on Other Wildlife Species data sheets for Blue Sky Pod. Based on that information, we concur that the project is not likely to jeopardize the continued existence of mountain plover. However, the specific stipulations being used for mountain plover, which are outlined on these data sheets, need to be stated in the final EA document as well.*

Site-specific stipulations designed to protect the mountain plover are listed as part of the Conditions of Approval found in the Master Surface Use Plan, Appendix D.

b. *The location of the proposed Blue Sky Pod is about a mile from the Muddy Creek drainage, about a mile and a half from a major fault, and Cow Creek runs through the pod. Based on these geologic characteristics, we cannot concur with the determination that there will be no Colorado River depletions and recommend conducting an isotopic test in the Blue Sky Pod area.*

Water analysis is currently being completed to determine if the age of the water indicates that it is connected to surface waters in the area. The process for completing this procedure is described on page 2-18 of the EA. Please note that the BLM will not authorize the discharge of water from any CBM well in the Blue Sky Pod until the United States Fish and Wildlife Service (USFWS) has reviewed the data and made the determination that implementation of this project will not cause a depletion to the Colorado River System.

c. *Appendix D states that the formations targeted for reinjection of the produced water will be the Cherokee Sandstone and Deep Creek Sandstone. These layers are not depicted in the geologic profile on page 3-15. To properly analyze whether the reinjected water will stay in the formations or migrate and eventually end up in the Colorado River System, we need to know the porosity, intrinsic permeability, and hydraulic conductivity of the layers.*

The Cherokee and Deep Creek Sandstones, which are currently targeted as water disposal zones, are located in the Steele Shale Formation. These two sandstones are found approximately two thousand feet below the coals which are targeted for gas production. Due to the additional depth of the Steel Shale member in relation to the Almond coals, the principles of basic geology infers that the sandstones in question are significantly older than the coals. The isotopic work completed in order to date the water in the coals for the Sun Dog pod indicated this water is at least ten thousand years old.

The Wyoming Oil and Gas Conservation Commission (WOGCC) requested PEDCO to obtain data to show that the water injected into the permitted injector well at the Sun Dog Pod well, ARFed 1691 8I, is actually staying in the Deep Creek formation at the permitted rate of injection. This was accomplished by running a temperature survey while injecting water at the permitted rate. The data proved, without a doubt, that the injected water was going into and remaining in the Deep Creek sand. This temperature survey is on file with the WOGCC. The WOGCC will require this test for injection wells in Blue Sky Pod if it appears migration or reinjection into this zone could occur.

d. *Because of the declining numbers of sage grouse and the fact that the project area provides suitable sage grouse habitat, we encourage the Bureau to take all necessary measures allowable to protect sage grouse in the project area and ensure that this project does not exacerbate factors contributing to sage grouse decline and thus give support to a listing petition.*

No active greater sage-grouse leks occur within the project area; however, areas of suitable habitat exist. No noticeable effects on greater sage grouse are anticipated provided all project-wide mitigation measures described in Chapters 2 and 4 of the EA, the RMP, and the Interim Drilling Policy are implemented.

e. *Appendix D states that CBM-produced water would be contained in the drilling reserve pit until the injection wells are completed. We could not find any information in the EA stating how long the CBM-produced water would be stored in the reserve pits. Any discharged CBM water with selenium content >2µg/L into reserve pits may present a risk to aquatic birds using these ponds if the produced water is left in the pits long enough for submerged aquatic vegetation or aquatic invertebrates to become established and provide a food source and avenue for selenium bioaccumulation for migratory birds. The EA should state the time period that CBM produced water will be temporarily stored in the reserve pits and should evaluate if submerged aquatic vegetation or aquatic invertebrates will become established during that time period.*

Because the reserve pits must be reclaimed within one year of well completion, it is unlikely that bioaccumulation would be seen within aquatic invertebrates due to the timing of their life cycle (one year). In addition, if it is known that metals or other hazardous substances are or could be present within the pond, the operator would be required to net the reserve pit to protect waterfowl and wildlife (see page 2-17 of the EA). Page 2-4 of the EA states PEDCO "estimates the reserve pit would be open two to eight weeks to allow for the evaporation of pit fluids."

f. *The EA shows that the CBM produced water from the Mesaverde aquifer can have a calculated SAR of 47.3. Although the CBM-produced water will not be discharged into surface waters, it will be conveyed from the CBM wells to a tank battery for deep well injection via pipeline. The EA should address produced water spills and impacts to surface waters and soils.*

The impact of high SAR occurs when the sodium in the water reacts with certain soils types over a long period of time. Because accidental spills from any of the 400 bbl water tanks would likely result in only a small amount of water over a short period of time, no impacts are anticipated.

g. *The EA should address the potential for methane seepage and coalbed fires and their impact on wildlife habitat.*

In the San Juan Basin of Colorado, the BLM San Juan Field Office has studied this issue and found that when water levels drop in confined aquifers during CBM production, ambient air is drawn into the coal beds that could supply the necessary oxygen to support spontaneous combustion or further oxidation of coal beds at the outcrop. However, its conclusion was that the downdip extraction of water from CBM production resulting in coal fires at the outcrop would only occur if these outcropping seams were hydraulically connected to the producing wells (BLM 1999). The nearest PEDCO well (1591-1-16) is four miles from the nearest Almond coalbed outcrop. As you move west from the outcrop, the dip is fairly flat for the first three miles, after which the dip steepens abruptly. Impacts from the removal of water during this exploration project is anticipated to be limited to the immediate vicinity of the wells in the project area. The potential exists that these coals may be hydrologically connected with the outcropping coals. However, the project is small and the amount of water that would need to be removed in order to reach these outcropping coals is enormous. This makes the possibility of any resulting coal seam fires from water extraction associated with the Blue Sky Pod exploration project exceedingly remote. Water-dating is also a required component of this project. This test will give an indication whether water from the seams being produced are isolated from surface recharge or are hydraulically connect to surface outcrops.

Methane migration can occur naturally anytime there is a gassy coal seam. Methane migration resulting from CBM development could occur in an inadequately cemented gas well. Cementing would isolate all other formations in the hole and would eliminate the possibility of contamination between hydrocarbon zones and/or water aquifers and other mineral resources.

h. *Page 2-5 of the EA states that potassium salts may be added to the drilling mud. Page 10 of Appendix B states that reserve pits will be dewatered and backfilled. The EA should state the amount of potassium salts added to the drilling muds and evaluate the effect of these salts on soils and vegetation after they are buried during reserve pit reclamation. Additionally, the potential for these salts to reach groundwater and surface water should be evaluated.*

The text in the EA is not correct and has been amended in Appendix A. The proponent will be using freshwater, biodegradable polymer soap, bentonite clay, and non-toxic additives in the mud system.

8. United States Department of Agriculture, Bridger-Teton National Forest

a. *Page 2-13 of the EA states, "On federal land, Pedco would initiate immediate abatement of fugitive dust when air quality or soil loss or safety concerns are identified by the BLM or WDEQ/AQD." I am assuming that this only relates to air quality problems associated with road traffic. Are the BLM or WDEQ/AQD actually funded for monitoring of air quality conditions?*

While BLM is not funded for air quality monitoring on a site-specific basis, compliance with the mitigation is expected. Because fugitive dust poses a safety issue, it will be to the advantage of the operator to water well pads and resource roads during construction and other times, when necessary to control emissions of fugitive particulate matter. Under the WDEQ/AQD "Wyoming Air Quality Standards and Regulations," sources operating within the State of Wyoming are required to control fugitive dust with the method approved by the Division Administrator. The amount of particulate matter shall be measured by source test methods specified by the Administrator and found in the WDEQ/AQD Air Quality regulations and in 40 CFR part 60.

b. *Page 4-3 of the EA says, "The small number of wells and project facilities included in the project would only generate a small amount of air pollutants." Small is a relative term and the emissions should be quantified or defined relative to something that is known.*

Typically, emissions from one CBM well have been quantified. See response 8g below.

c. *The last sentence on page 4-3, second paragraph, says, "Wind dispersion of the small quantity of air pollutants generated by project activities would likely eliminate the formation of regional haze or acid deposition." This may be true on-site, but how about down wind? Pollutants in the air have to settle out some place. Particulates in the air do contribute to regional haze and acid deposition.*

PM10 can contribute to the degradation of visibility; however, the nearest Class I area, Mount Zirkel PSD Class I Wilderness Area in Colorado, is approximately 55 miles from the Blue Sky Project Area. Over that distance, a portion of PM10 generated from the Blue Sky Pod would be deposited out of the atmosphere. Furthermore, AP-42 emission factors for fugitive dust from unpaved roads and western surface coal mining indicated that PM2.5 (particulate matter 2.5 microns and less, and the fraction with greater potential for entrainment over long distances) ranges from 10-15% of total PM10. Because the release of fugitive dust from unpaved roads is at ground-level and is non-buoyant, there is a greater potential for atmospheric deposition to occur.

d. *Page 4-4 states that emissions generated from compressor operation would contain a negligible amount of SO2 and particulate matter due to the composition of coalbed methane gas. Define negligible or quantify emissions.*

As shown in response 8g below, no SO2 emissions are anticipated.

e. *There is no mention of emissions related to the pumps being used to dewater the coalbeds and to pump the water to injection wells. Was this not considered for a reason?*

A down-hole pump would operate at each well site to pump produced water, and an average of eight pumps could be powered by one generator. The generator engines average 375 horsepower and would be temporarily powered by produced gas until underground electrical

power is installed in the field. One 375 horsepower generator engine fired with natural gas would emit 0.8 lb/hour (3.6 tpy) NOx assuming the current Best Available Control Technology (BACT) of 1 g/hp-hr for this type of gas-fired generator currently applicable in northeast Wyoming was met. Based on AP-42 emission factors for an uncontrolled natural gas-fired engine, one engine would emit an estimated 1.2 lb/hour (5.4 tpy) CO and 0.4 lb/hr (1.6 tpy) volatile organic compounds (VOCs).

f. *Page 4-4 of the EA states that emissions from the production wells would be negligible as the produced gas is nearly 100% methane and will require no ancillary production facilities at the well site. What about dehydrators and scrubbers located at the compressor stations? Are these CBM wells ever flared? Would that not be a source of emission not considered?*

Because the produced gas is nearly 100% pure methane, no dehydrators or scrubbers will be required for this project. Under the description of the Proposed Action on page 2-8 of the EA, there is no consideration for the venting or flaring of methane should commercial quantities of CBM gas be discovered. The Proposed Action states that the gas would be moved to an existing sales line located near the project area.

g. *The EA discusses emissions resulting from this project would be similar to those found in oil and gas projects such as the Continental Divide, but on a much smaller scale. Is it reasonable to considered development of deep natural gas wells with condensate to be the same as coalbed methane wells? There is no real quantification of the differences in the document. I do not think they are very similar in the amounts or the types of emissions.*

Emissions from conventional natural gas drilling and CBM drilling are very similar. Air emissions generated from one well during both natural gas and methane gas production are summarized in the table below. Air emissions from a 1,000-horsepower compressor engine are also shown in this table. Emissions from well sites and compressor engines are similar for CO, NOx, SO2, and PM10. VOC emissions from coalbed methane production are less than VOC emissions from natural gas production, due to the absence of non-methane hydrocarbons in the nearly 100% methane gas stream. Gas analyses performed for representative methane gas streams indicate no or negligible amounts of hazardous air pollutants (HAP) emissions in the methane gas stream.

In addition, because the dehydration of methane gas is not proposed for this project, no liquids are removed from which flashing of VOCs and HAPs will occur. Similarly, no gas processing facilities are proposed in the Blue Sky Pod. Air emissions from a representative gas processing plant in the CD/WII Project Area were calculated to be 3.5 tpy CO, 16.7 tpy NOx, 21.6 tpy VOC, 7.3 tpy HAPs, and <0.1 tpy SO2 and PM10. The presence of fewer VOCs and HAPs in the natural gas stream than in natural gas, and the absence of dehydration and gas processing in the Blue Sky Pod, will result in lower VOC and HAP emissions for 24 wells (and associated equipment) than analyzed for 24 wells in the CD/WII study.

Air Emissions from Production Operations in Tons per Year (tpy)
CD/WII Project (Natural Gas) and Atlantic Rim Project (Coalbed Methane)

Pollutant	CD/WII (Natural Gas)[1]		Atlantic Rim (Coalbed Methane)	
	One Well Site[2]	1000 hp Compression	One Well Site[4]	1000 hp Compression
CO	0.02	19.28	0.02	19.28
NOx	0.08	19.28	0.11	19.28
SO2	<0.1	<0.1	0	0
PM10	<0.1	<0.1	0.013	1.74[5]
VOC	38	0.97	0.009	0.97
Formaldehyde	--	1.95	--	1.95
Total HAPs	6.64	[3]	--	[3]

[1] From: BLM, 1999. Air Quality Impact Assessment Technical Support Document, Continental Divide/Wamsutter II and South Baggs Natural Gas Development Projects – Environmental Impact Statements, Volume I – Emissions Inventory and Near-Field Analysis. U.S. Department of the Interior, Bureau of Land Management Rawlins and Rock Springs Field Offices, April 1999.
[2] Emissions from non-BACT well (maximum emissions scenario)
[3] TRC, 2000. Draft emissions calculations for Atlantic Rim EA, TRC Environmental Corporation, Laramie, Wyoming, October 2000.
[4] PM10 emissions differ from CD/WII due to use of PM10 emission factor of 0.000397 lb/hp-hr from EPA's AP-42 (CD/WII assumed PM emissions negligible).
[5] PM10 emissions differ from CD/WII due to the use of PM10 emission factor of 0.000397 lb/hp-hr from EPA's AP-42 (CD/WII assumed PM emissions negligible).

h. *Page 4-4 of the EA states, "The analysis for the Continental Divide EIS project included impacts to class I areas from oil and gas development in southern Wyoming. Based on the relative size of the project, when compared to the magnitude of those projects, no ambient air quality standards would be violated and no adverse air quality conditions would result from the project." This gives me the impression that, because the Continental Divide EIS did not show significant impacts in class I areas, this project will not either. This does not take into account other activities not analyzed by the Continental Divide EIS such as the 700 wells authorized in the Pinedale Anticline project. The Pinedale Anticline wells were not considered in the Continental Divide EIS.*

Because the wells proposed for drilling have been included as part of the 3,000-well model completed for CD/WII, the conclusions of the CD/WII cumulative air quality impact analysis for that project is applicable to the Proposed Action described for the Blue Sky Pod development as well. The Pinedale Anticline EIS conducted air quality modeling for the proposed project and looked at cumulative impacts associated with the development anticipated at that time.

i. *Define the Cumulative Impact Analysis Area. Is it 100 miles or is it the area used for the Continental Divide EIS?*

For air quality concerns, the Cumulative Impact Analysis Area is the Laramie Air Basin (see page 4-28 of the EA).

9. <u>Biodiversity Associates</u>

a. *The Blue Sky Pod Project, if implemented, would violate 40 CFR 1506.1 because the Interim Drilling Policy and associated activities will significantly adversely affect the environment, are inseparably linked to the Atlantic Rim Coalbed Methane Project, and would prejudice the outcome and alternatives of the subsequent EIS decision. For example, the No Action Alternative would not be available for the subsequent EIS prepared for the Atlantic Rim project if 200 wells were already drilled under the interim policy.*

Implementation of this project, as well as all of the other exploration pods proposed in the Interim Drilling Policy, would still allow a No Action Alternative to be considered in the Atlantic Rim Coalbed Methane EIS. The No Action Alternative does not mean no development. The No Action Alternative means that a particular project would not take place. It is highly unlikely that any type of development EIS would even be considered without first conducting exploration activities to obtain information to evaluate the potential for full development of the gas resource. This is the approach being taken in the Hanna Basin (Hanna Draw and Seminoe Road projects). If exploration activities in both basins indicate that CBM is economically producible, full field development would not allow a "No Action Alternative" where no development exists at all. These exploration projects would become part of the cumulative impact analysis for each project EIS. A No Action Alternative would be denial of the proposal as described in the Proposed Action.

b. *The exploratory project is intrinsically linked to the Atlantic Rim Coalbed Methane Project and the BLM is segmenting the proposed exploration project which is a clear violation of NEPA.*

The purpose of preparing the Blue Sky Pod EA is to allow for exploration drilling to gather data for the preparation of the Atlantic Rim Coalbed Methane EIS. This project, as well as others proposed, will help determine if and where commercial quantities of gas exist within the 310,335-acre project area. At this time, the proposal to develop a 3,880 well field is not reasonably foreseeable. No data are available to confirm that CBM resources can be economically-developed in the Atlantic Rim Coalbed Methane Project Area. To develop an EIS and go forward with full field development without some exploration drilling in an area that is data poor would be very risky, at best. Several responses received during scoping stated that full field CBM development should not go forward until some more information could be gathered. By allowing some exploratory wells to be drilled, the company will be able to confirm where, and if, methane gas exists in economic quantities and if production is economically feasible. This information will help in the development of alternatives as well as help in determining any mitigation that could be applied to reduce impacts should full field development become feasible. The 3,880 well number was used for the purpose of scoping and derived solely by dividing 80 acre spacing into the total number of acres in the project area. Companies involved with this project stated during the scoping meetings that this well number is not reasonably foreseeable. Given the variability in the geologic setting and the fact that CBM is an unproven commodity in this area, developing 3,880 wells is not reasonably foreseeable. Should economic quantities of methane exist, then the EIS will fully disclose impacts associated with the development of the Atlantic Rim Coalbed Methane Project.

c. *The project violates the Federal Land Policy and Management Act because the project is outside the reasonably foreseeable development scenario of the Great Divide RMP. The EA states that the BLM considers existing oil and gas decisions to be adequate for CBM development; however, CBM development and production have dissimilar impacts to conventional drilling. Because CBM is not even mentioned in the RMP, this project violates NEPA.*

The RMP states the entire planning area is open to oil and gas leasing and does not make a distinction as to whether oil and gas development is "conventional" or otherwise. The minerals management program policy and goals described in the RMP are to provide the opportunity for leasing, exploration, and development of oil and gas while protecting other resource values. CBM-related activity is not unanticipated just because the RMP does not use the specific words "coalbed methane." "Methane" and "natural gas" are used interchangeably, regardless of the source. No specific formation, bed, or seam was identified in the RMP as being suitable or unsuitable for oil and gas development. Natural gas production operations are very similar, and CBM development is no exception. The development and production sequence described in the Oil and Gas Appendix in the *Draft Environmental Impact Statement for the Medicine Bow-Divide Resource Management Plan* (later the *Great Divide RMP*) describes typical development operations, even to the point that water may need to be removed during natural gas production. Therefore, even if CBM development has not been specifically mentioned, the activity is clearly consistent with the terms, conditions, and decisions of the approved plan [43 CFR 1601.0-5(b)].

d. *The Atlantic Rim Coalbed Methane Area contains undeveloped lands of roadless and undeveloped qualities. However, the BLM has never performed an adequate wilderness inventory. This is a violation of FLPMA and other laws and regulations. The BLM must conduct an adequate inventory of the entire area, before the project is considered.*

The BLM wilderness review program stems from Section 603 of FLPMA. The BLM was directed to prepare an inventory of public lands and their resources including the identification of areas having wilderness characteristics. Per Section 2(c) of the Wilderness Act of 1964, the BLM Rawlins District inventoried areas of at least five thousand acres of land for potential wilderness character. Within the Atlantic Rim Coalbed Methane Project Area, the northern portion dropped out because of the existence of the checkerboard land pattern; to be considered for a wilderness inventory unit the area must contain 5,000 acres of contiguous public lands. Lands south of this checkerboard to an existing road north of Muddy Mountain in Township 13 was included in the Wild Horse Basin Initial Wilderness Inventory Unit. The conclusion from this inventory was that human activity and permanent manmade improvements throughout the area precluded it from having wilderness quality. The land pattern changes to the south of this road and, although some federal lands exist, the majority of the land is privately or state-owned.

e. *The Interim Drilling Policy is a violation of the Administrative Procedures Act. The policy constitutes a rule under 5 USC 551(4). The agency has the obligation to not only notify the public in the Federal Register of the a proposal to create a rule such as the Interim Drilling Policy, but also to solicit public comment under NEPA on the proposed rule.*

The definition of a rule according to the Administrative Procedures Act means "the whole or a part of an agency statement of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy or describing the organization, procedure, or practice requirements, of an agency and includes the approval or prescription for the future

of rates, wages, corporate or financial structures or reorganizations thereof, prices, facilities, appliances, services or allowances therefor or of valuations, cost, or accounting, or practices bearing on any of the foregoing."

We do not feel that the Interim Drilling Policy meets any part of this definition. The Interim Drilling Policy was developed to provide guidance in managing exploration activities while the environmental impact statement is being prepared.

f. *The EA violated NEPA by failing to evaluate a reasonable range of alternatives. NEPA requires the BLM to "rigorously explore and objectively evaluate" all reasonable alternatives to proposed federal actions. The EA, at page 2-22, states, "Only alternatives addressing allowable actions specified in the Interim Drilling Policy are considered in this analysis, outside the Atlantic Rim EIS analysis. All other alternatives would only be considered in the Atlantic Rim (sic) EIS analysis. As a result, no alternatives to the project, other than the No Action Alternative, were considered in this analysis." Using the IDP as a means to restrict alternatives is invalid because the IDP itself is legally invalid. Even if the IDP were valid, it would not supersede the NEPA requirement to explore and evaluate a range of alternatives.*

The IDP is very important for providing guidance to the operators regarding exploration activities. The IDP identifies protective measures to comply with 40 CFR 1506.1, but other authorities, rules, regulations, mitigation in the RMP, in addition to the IDP, played a role in determining where and what exploration activities could occur within the Blue Sky Pod Project area.

According to the H-1790-1, BLM NEPA Handbook, Chapter IV, Preparing Environmental Assessments, page IV-3, alternatives to the proposed action must be considered and assessed whenever there are unresolved conflicts involving alternative uses of available resources. "Public controversy or concern about a proposed action does not necessarily mean that alternatives must be analyzed." The Handbook raises the question whether there are reasonable alternatives for satisfying the need for the proposed action, and will these alternatives have meaningful differences in environmental effects.

If there were other significant alternatives that the BLM did not consider, the public could have identified these in its comments. However, only one alternative was mentioned and that was the use of directional drilling to minimize the amount of surface disturbance. The rationale for not considering directional drilling in the Blue Sky Pod Project is discussed below in response 9z.

g. *While the EA does address the cumulative impacts of all 200 interim wells, it does not address impacts from existing CBM development in the area or the impacts of the proposed Atlantic Rim Coalbed Methane Project. By failing to consider the effects of the Blue Sky Pod in conjunction with the effects of other proposed coalbed methane projects that are reasonably foreseeable, the BLM has violated NEPA.*

The matrix on page 4-28 of the EA, provided in the cumulative impact discussion, presents the cumulative impact areas for each resource impacted by the Blue Sky Pod Project. In general, two main factors determine whether other actions should be included as part of the cumulative impact analysis--location and timing of actions. The cumulative impact analysis must take into account the past, present, and future actions that overlap in time and location with the proposed action. So, for example, in the case of the Blue Sky Pod Project, the project area does not contain, and no project component would disturb, any crucial winter range for elk. In the event of implementing this project, the assumption is that no impacts will occur to crucial elk winter range and, therefore, implementation of this project would not

effect crucial elk winter range. Thus, a cumulative impact discussion for this resource is not required. We agree that development of the pods in the 200-well program may impact the elk crucial winter range, but impacts on crucial winter range for elk will not be addressed until a development of a proposed pod impacts this range. Table 4-1, pages 4-28 and 4-29 of the EA, takes this approach by breaking down what resources may be cumulatively affected by the implementation of the Blue Sky Pod Project. For example, the Laramie Air Basin is impacted by this project and is common to all pods, while water resources impacted by the Blue Sky Pod Project would occur only in the Muddy Creek watershed, Pods 5, 6, and 8.

The proposal to develop a 3,880 well field is not reasonably foreseeable. At this time, there is no data available to confirm that CBM resources can be developed and produced in the Atlantic Rim CBM area. Implementation of the 200-well interim drilling program was designed to identify where areas of CBM drilling may be economic and the number of wells at which the program becomes economic. The response to CBM drilling is likely to be much different throughout the 310,335-acre project area. It could be that only a small number of wells would be needed for full field development, that additional wells over and above the 3,880 well proposal would be required to economically develop the area, or that much of the area cannot be economically developed. The only reasonably foreseeable activity at this time, other than conventional uses of oil and gas drilling and ranching, is the 200-well proposal. See response 9b, above.

h. *In a related matter, on page 4-12 of the EA, BLM admits "in addition to the direct loss of habitat due to construction...disturbances from human activity and traffic would lower wildlife utilization of habitat immediately adjacent to these areas." The BLM admits species that are sensitive to human disturbance would be impacted the most by construction activities.*

The analysis concludes that human activity would lower wildlife utilization during construction activities, but concludes that no long-term impacts are anticipated. Page 4-11 of the analysis states, "Construction, operation, and maintenance of the proposed CBM wells and associated facilities are expected to have minimal short-term effects on wildlife in the project area." It goes on to say, "Extensive suitable habitat for may species exist on lands adjacent to the project area and would support any individuals that may be temporarily displaced." Only a very small proportion of the available wildlife habitat within the project area would be affected. After the construction phase is completed, the analysis on 4-12 states, "Many animals may become accustomed to equipment and facilities in the gas field and may once again use habitats adjacent to disturbance areas."

i. *On page 4-13, the EA makes the statement that "no noticeable effect on the greater sage grouse population is expected." Any impact to individuals should be considered an impact to a population and, therefore, must be considered unacceptable. Stipulations under the Proposed Action would protect lands within ½-mile of a sage grouse lek, but the habitat located next to the lek contains most of the nesting habitat. A two-mile buffer must be maintained around sage grouse leks, within which surface-disturbing activities must not be allowed.*

Current policy is to protect the nesting activities of greater sage grouse from February 1 to June 30, including strutting grounds and habitat. The timing stipulation is applied to areas within a two-mile radius of an active lek. There are no plans to enforce a no surface occupancy stipulation within the two-mile radius of a sage grouse lek.

j. *No population data was collected on burrowing owls and Wyoming pocket gophers. Without accurate information on populations within the project area, the EA cannot determine that the proposed level of development would not impact the burrowing owl and the pocket gopher. A complete Biological Assessment including a systematic inventory for these species and supplemental NEPA documentation is required.*

Wyoming pocket gophers are found in meadows with loose soil. The type of vegetation in this pod is dominated by sagebrush and saltbush. Therefore, there is no potential habitat located within the pod, even though the EA mentions the possibility of occurrence. Burrowing owls have the potential to occur within the project area; however, during prairie dog mapping, no burrowing owls were observed. BLM raptor timing stipulations would also protect areas where burrowing owls are observed. The BLM initiated informal consultation with the USFWS on the Blue Sky Pod project through letters dated December 20, 2001, and February 15, 2002. The USFWS responded, in a letter dated February 28, 2002, and concurred with the determination that the project would not likely affect the black-footed ferret nor jeopardize the continued existence of the mountain plover. The USFWS did not request that a biological assessment be completed for the Blue Sky Pod project.

k. *The project area includes the potential for black-footed ferret habitat. The BLM must consult with U.S. Fish and Wildlife Service to determine the potential impacts of the project to black-footed ferrets before the project can legally go forward.*

A black-footed ferret survey was completed for the Blue Sky Pod in August 2001. No ferrets or sign were seen during these surveys. This information was submitted to the U.S. Fish and Wildlife Service and a response was received by BLM on December 31, 2001, stating that construction of the Blue Sky Pod will not adversely affect black-footed ferrets. The area is considered cleared for a twelve-month period, until August 16, 2002, at which time a new survey will be done if construction activities are not yet completed.

l. *The project area includes important winter range for elk, mule deer, and antelope. Elk and mule deer are particularly sensitive to disturbance during winter months. Special provisions should be made to close roads and cease all activities associated with the project between November 15 and April 30.*

The only activities allowed in the area during this time period are maintenance activities. Again, this is generally considered a casual-use type of activity which is similar to those conducted by hunters and other recreationists and is not anticipated to result in an increase in impacts from those resulting from current users.

m. *The EA states that produced water will be discharged for a short period of time during testing to determine if the wells are productive. The EA also states that one well can discharge up to 11,500 gallons of water per day. This period of time must be given to determine the potential impacts of this discharge. Depending on the timing of the discharge, impacts to fish, amphibians, and invertebrates could be significant. Several T&E species of fish are also downstream from the project area, and a high level of clarity is needed regarding this issue to determine whether the Proposed Action would violate the ESA.*

A tank will be constructed to contain produced water for testing as per the Conditions of Approval, Appendix D. All other produced water will be reinjected into one of the two injections wells as required by the Conditions of Approval. No other disposal is allowed without prior authorization and no other type of disposal, other than reinjection, is allowed in

the Colorado River Basin System per the Interim Drilling Policy. Because no uncontained, surface discharge will be allowed, no impacts to downstream T&E species are anticipated from the minimal water discharge.

n. *We would like to point out, in our previous comments we stated that the bonytail chub is found in Muddy Creek itself according to Deputy Director of the Wyoming Game and Fish Department Bill Wichers (in the April 22, 2001, Casper Star Tribune). The possibility of the existence of this species was blatantly ignored by the BLM in preparing this EA. In addition, the BLM procrastinates by stating that, if T&E species are detected downstream, the Fish and Wildlife Service will be consulted and a protection plan will be developed at some later date. To meet its legal obligations under NEPA, the BLM must inventory for sensitive and T&E species downstream before the Decision Record is issued. Moreover, no specific plan for monitoring or surveying Muddy Creek or Little Snake is proposed.*

This question was asked in regard to the Sun Dog Pod and was answered in the Decision Record for that project issued December 21, 2001. The information presented in the newspaper was a misquote, and the species does not exist in the Muddy Creek drainage. Because this species is not present, no discussion was presented in the Blue Sky Pod EA.

o. *Using the same sources as the BLM, we obtained a list of species of special concern. Upon comparing it to Appendix E in the EA, we noticed that the northern many-lined skink, the milk snake, Hooker wild buckwheat, and western phaecelia were wrongfully excluded.*

The concerns you brought up regarding sensitive species you feel should be on, but not shown on the BLM sensitive species list, is outside of the scope of this project

p. *Disturbance estimates presented in the EA are misleading. The total acreage disturbed is actually much greater because roads and pipeline are crisscrossed throughout the pod. The total effects of fragmentation and other indirect effects of this road/pipeline system must be included in the disturbance estimates. In particular, the effects of roads on wintering ungulates have been understated. Researchers have found that effects of roads on elk in similar habitats extend 2.5 km from each road.*

Our estimates are based on actual disturbance to the surface of the land from the project components. Page 4-11 of the EA states the project is expected to result in some direct loss of habitat and disturbance of big game species during the parturition period and on winter range which can increase stress and may influence species distribution. The actual acreage of habitat that becomes unusable as a result of this project on big game animals could only be determined after site-specific research has been conducted over a period of several years. These types of wildlife studies would be part of the NEPA analysis should full-field development prove feasible. Impacts to elk from roads associated with the Blue Sky Pod project are expected to be minimal given the small amount of disturbance and that undisturbed habitats are available.

q. *The EA should include all possible measures to prevent adverse environmental impacts. For example, all reserve pits should be lined, regardless of soil permeability, and no construction should take place within 500 feet of surface water or riparian areas.*

Whether or not to line a reserve pit is examined on a case-by-case basis. If soils are gravelly or sandy, the pit will likely be lined. However, in clayey soils, pit lining may not be required. Soils in the Blue Sky Pod project area tend to be clayey, and no recommendation was made to line these pits.

While the requirement for a 500-ft buffer is standard mitigation found in the RMP, BLM realizes that some linear project components such as roads and pipelines may not be able to avoid all of these surface water features. Within the Blue Sky Pod project area, the access road through the project area will cross two ephemeral streams. In order to protect stream values, the COAs for the Blue Sky Pod project include requirements for culvert design for these crossings.

r. *The EA does not provide adequate analysis of the possibility of subsidence and earthquakes due to ground water drawdown and degasification at the coal seam.*

It is highly unlikely that an exploratory CBM program would result in enough change to trigger the tectonic stresses required to create an earthquake. In CBM, the seam is not totally de-watered; the water is removed enough to reduce the pressures in the coal to allow gas to flow. Complete aquifer dewatering, not simply a reduction in the static water level, would be necessary to allow aquifer media compression to create subsidence.

s. *The EA does not disclose the extent of hydraulic fracturing inherent to the project, nor the effects of toxic fracing fluids on groundwater or other resources. It is well-known that fracturing is a common practice in CBM extraction and the fracing fluids include a number of highly toxic substances.*

Hydraulic fracturing is a process in which sand within a viscous fluid is injected into a reservoir in order to improve the reservoir productivity. The viscosity is required to carry the sand and to limit leak off into the formation permeability. Enzymes reduce the viscosity in the formation to that of water and the fluid is easily produced back. The primary fluid used for the hydraulic process is water and, in the case of a single-phase or water saturated system like coal, essentially all of the fracturing water is produced back during the initial dewatering phase. Therefore, there is a very low probability of any impact due to hydraulic fracturing. This conclusion is further verified by the Ground Water Protection Council's survey of 10,000 coalbed methane wells and the State of Alabama and the EPA analysis of the well in the LEAF vs EPA lawsuit that showed no contamination (Testimony of the Independent Petroleum Association of America and the National Stripper Well Association before the Environmental Protection Agency regarding Underground Injection Control; August 25, 2000).

t. *The EA fails to analyze the long-term effects of keeping wells active beyond the life of the project. The construction of new water sources in an arid environment almost guarantees the creation of severe cattle overgrazing in the immediate vicinity of the water development, with all of the attendant ecological impacts. Water wells should be abandoned and restored to a natural condition when the project is terminated.*

Depending on the proposed use of the water well, conversion of existing gas wells to water wells for livestock watering would require assigning the well to the grazing permittee, with BLM approval, after completing the appropriate NEPA documentation. Whether or not, or how many of these wells might be converted to other uses is unknown at this time and, therefore, cannot be adequately analyzed.

u. *Will the area be reclaimed with native species?*

Reclamation of the surface will be conducted as described in Chapter 2 of the EA and the Master Surface Use Plan (Appendix D). The ultimate long-term goal of reclamation is to establish a plant community which approximates the surrounding, undisturbed area. The COAs state the type of seed mix the operator will be required to use (see Appendix D).

v. *Page 2-14 of the EA mentions that a 100-foot buffer of vegetation will be maintained between surface-disturbances and drainage channels "where possible." It is always possible to maintain such a buffer; the BLM should eliminate all ambiguity and make this stipulation an ironclad requirement.*

This is a standard operating procedure that is evaluated and implemented by the BLM at the time of construction on a case-by-case basis. While BLM will attempt to implement this mitigation measure, in some cases there might be an advantage to constructing a road inside of the 100-ft buffer where locating the road outside of 100 feet may result in greater impacts to other resources that may be present (e.g., T& E habitat or cultural resources).

w. *Reserve pits must always be lined with impermeable fabric because they will contain hazardous chemicals. It is not sufficient to assume that some soils and bedrocks will prevent leakage from reserve pits; the BLM has no way of guaranteeing that no leakage will occur.*

Page 2-15 of the EA states that subsoil material of the pit will be inspected to assess soil stability and permeability and, based on the results of this analysis, reinforcement or a lining may be required. The reserve pits will be constructed according to WOGCC and BLM requirements.

x. *Muddy Creek already has unacceptably high levels of sodium and sediment due to human activities such as grazing, road building, and oil and gas development. The presence of sensitive warm water fisheries in this stream militates against any action that will increase the alkalinity and turbidity of the stream.*

The components of this project reflect Management Objectives described in the RMP to reduce salt loading in watersheds that lie within the Colorado River Basin. The requirement to inject produced CBM water for projects proposed by PEDCO and located in the Colorado River Basin System will reduce salt and sediment loading caused by the development of this exploration project that might have occurred if surface disposal was allowed. Implementation of the project-wide mitigation measures and procedures will further reduce the potential for sediment loading from the construction of this project.

The Muddy Creek Coordinated Resource Management Group has worked since 1990 to improve the Muddy Creek watershed using a variety of techniques, including such things as changes in season of use, pasture rotation, placement of in-stream structures, changes in road use, and planting along riparian corridors to improve water quality, reduce erosion and sedimentation, restore riparian habitats, and improve critical ranges for antelope, deer, and elk.

y. *The EA has noted that most of the soils in the project area have a poor to fair potential for revegetation. Thus, it is crucial that surface disturbance be minimized in this area, resulting in the No Action Alternative being prefered.*

Page 4-6 states, "Revegetation potentials range from mostly fair to poor, with some areas rated as good." The EA recognizes that the duration of effects to vegetation and habitat would depend on the time required for natural succession to reestablish vegetation to predisturbance conditions is dependent on climate, edaphic (physical, chemical, and biological soil conditions), and would include the amount and quality of topsoil salvaged, stockpiled, and spread over disturbed areas (page 4-9 of the EA). As stated in the Master Surface Use Plan, revegetation efforts will comply with BLM specifications on all BLM surface

ownership lands (see Appendix B of the EA, page 10). The seed mixture, including fertilizer and mulching requirements, seeding depth, and seed drilling specifications, will be developed in consultation with BLM. With proper construction and reclamation techniques and implementation of mitigation described in Chapter 2, impacts to soil resources in the project area are anticipated to be minimal.

z. *The BLM needs to evaluate a minimum footprint alternative that would require wells to be clustered and employ directional drilling techniques to minimize the creation of new roads, well pads, and other surface disturbances. Ecological advantages of clustered horizontal wells are well-documented. By requiring cluster development, the BLM can minimize the environmental damage that will occur if coalbed methane development is allowed to proceed. The economic feasibility of directional drilling is also well documented.*

There are several reasons why horizontal/direction drilling would be difficult to utilize for the Blue Sky Pod project.

First we need to look at the seams that will be produced. There are three major groups of coal being targeted for methane production in the project area. The Garden Gulch coals are quite thin and discontinuous. These consist of 8 to 12 coal seams per well ranging in thickness of 1 to 4 feet. These seams do not correlate over long distances. The Almond coals are made up of 3 subgroups of coals, with 8 to 12 seams ranging in thickness from 1 to 10 feet. Some Almond coal seams correlate between wells over long distances, but there are still a high number of seams or riders that do no correlate from well to well. Finally, the Allen Ridge coals are quite thin and discontinuous, with 6 to 10 seams per well, averaging 2 feet in thickness. Thin or discontinuous target zones are poor prospects for horizontal drilling.

In addition, horizontal drilling technology requires precise control of target locations in all three dimensions. Even the thickest coal seams in the project area are below the vertical resolution of current seismic technology, therefore yielding no target control for lateral drilling. This being the case, without the knowledge of where the coal seams pinch out or end, horizontal drilling would not produce the desired results. It would be impossible to stay in coal seams during lateral drilling due to the limited control and limited thickness of the coal seams.

It would not be economical to drill laterals in thinner seam coals. Potentially up to 24 coal seams would have to be developed per well (i.e., 24 laterals would need to be drilled to develop all seams). Also, horizontal laterals would not be economical in thin seams, even if adequate control was available, as the cost of each lateral would exceed the return on ultimate gas recovery. Thin, uneconomic zones would not be produced if horizontal techniques were required, this could lead to economic failure of the entire project because of the gas contribution available in the thin seams. In conventional drilling, these seams would contribute to overall production, therefore maximizing the recovery of the gas resource.

The coal seams are quite shallow for the use of this technology throughout most of this project area and would limit the distance that could be drilled from the surface location. In addition, there would not be adequate forces in a shallow well to drill the necessary lateral distance to gain desired advantage of increased drainage area. Short horizontal laterals would not significantly increase the drainage area compared to vertical well bores; horizontal drainage patterns would be on the order of only a quarter section or so.

The only economic horizontal coal programs currently active are used to vent methane in front of coal mining operations where it is required to drain coal seams of significant thickness (greater than 6 feet) as quickly as possible for the safety of miners.

The advantages in using vertical wells include maximizing the production of gas resources from all coal seams present in the well bore, regardless of the thickness or seam discontinuity of the coals. Vertical well bores may ultimately have the same drainage areas due to the true vertical depth of the coal seams' drainage areas.

10. National Wildlife Federation

a. *The Environmental Assessment for the Blue Sky Pod CBM Project violates the National Environmental Policy Act because it relies on the BLM's Interim Drilling Policy. Under BLM Rules, the Interim Drilling Policy should have been subject to NEPA.*

The Council on Environmental Quality (CEQ) regulations found at 40 CFR 1506.1 discuss the requirements that must be met to allow limited activities during the preparation of an EIS. The IDP was prepared to guide exploratory oil and gas activities and to notify the operators what requirements would be necessary to keep activities at a reasonable level during the preparation of the EIS, while allowing the gathering of data necessary for the completion of the environmental analysis. The IDP is neither a decision nor an action. No action will be authorized until a NEPA document and a Finding of No Significant Impact have been completed. The IDP is a policy to guide activity while collecting data to conduct an environmental analysis.

The IDP describes the "conditions and criteria" that will determine what and where exploration activities may be considered. Those exploration activities constitute "the action" and are subject to NEPA analysis. The IDP itself states, "Prior to initiating interim drilling, an Environmental Assessment, including a detailed Water Management Plan will be prepared and approved for each individual pod."

The policy falls under BLM Manual H-1790, Appendix 3, Categorical Exclusions, Part 1.10, which states, "Policies, directives, regulations and guidelines of an administrative, financial, legal, technical, or procedural nature; or the environmental effects of which are too broad, speculative or conjectural to lend themselves to meaningful analysis and will be subject later to the NEPA process, either collectively or case-by-case." The IDP meets the policy, guidelines, technical, and procedural categorical exclusion criteria.

IDPs have been generated for several exploratory drilling projects within the Rawlins Field Office and other BLM offices in Wyoming. For this reason alone, the Atlantic Rim IDP does not set a precedence because other IDPs have been prepared. Most recently, we used the IDP process to manage exploration activities while preparing the Continental Divide and Desolation Flats EISs. The basic criteria in establishing these IDPs was for exploration drilling to avoid, as much as possible, sensitive resource areas. These areas had been determined to include ACECs, crucial winter ranges, sage grouse leks, T&E species and their habitats, sensitive cultural resource areas, as well as other resources. Limited exploration activity has also been allowed, under defined conditions, by the BLM in the Powder River Basin outside of the Wyodak EIS area.

The Great Divide RMP specifically describes under the section discussing "Management Actions" relating to oil and gas development, "Surface-disturbing activities will be restricted and intensively managed to maintain important resource values in ACECs, the Baggs Elk Crucial Winter Range, and in overlapping crucial winter ranges for the various big game

species." The conditions and criteria described in the IDP reflect protective measures described in the RMP that are designed to protect sensitive resources considered by the Interdisciplinary Team as likely to occur in the Atlantic Rim CBM Project area.

Regulations found at 40 CFR 1506.1 directly state that interim activities, within the limits described, are allowed during preparation of a project EIS. While the IDP document allows the BLM to better manage interim activities to meet CEQ requirements, clearly, interim activities could proceed without an IDP.

b. *The Interim Drilling Policy makes numerous decisions which determine the location and extent of the environmental impacts of coalbed methane drilling in the Atlantic Rim Project Area.*

The IDP establishes conditions and criteria to keep all activity at an insignificant and a reasonable level during completion of the EIS. The basis for the criteria described in the IDP document are decisions, management objectives and actions, and mitigation described for oil and gas operations and other surface-disturbing activities in the Great Divide RMP, oil and gas rules and regulations, and standard operating procedures. There are limitations on exploration drilling and location of activities described in the IDP, but no decisions are made, as it is not meant to be decision document. The limitations are based on allowing exploration without having an adverse environmental impact or limiting the choice of reasonable alternatives while allowing the gathering of data necessary for the completion of the EIS. The operators are allowed to propose activities under the guidelines given, but can choose how many wells to drill, where to place facilities, locations, roads, and propose alternate methods of water disposal, as long as the activities fall within the conditions and criteria of the IDP. The operators cannot exceed the number of wells described in the IDP but are not obligated to drill all 200 wells, nor a total of 24 wells in each pod. No proposal will be approved until an EA has been completed and then reviewed by the public. The BLM will review the EA and the public comments and will then make a decision as to whether the project as described will result in no significant environmental impacts.

1) *The IDP sets a maximum of 200 CBM wells for research and exploratory purposes during the interim period. How would the impacts have been different if the maximum number of wells were different? Were alternatives to a 200 well maximum ever considered?*

Yes, other levels of drilling were considered. The first request by the operators was to consider 400 exploratory wells. After the BLM required the operators to propose an exploratory plan located outside of areas of known sensitive wildlife resources, the number of exploratory wells were revised to 228. Based on sound reservoir management principals, BLM determined that 200 wells was an appropriate level of research and exploration to allow during the preparation of the EIS. This was used to develop the proposed action for the Blue Sky Pod EA.

2) *The IDP allows wells in the nine pods the operators have proposed. Did BLM explore other pod areas or fewer pod locations? Would the impacts have been different had there been fewer or different pod locations?*

Again, the level of exploratory activity was based on sound reservoir management principles. The intent of the IDP was to keep exploratory drilling outside of sensitive resources. Placement of the proposed exploratory drilling in different locations may have resulted in greater impacts to sensitive resources.

3) *The IDP sets a maximum of only 24 CBM wells within any pod. How would the environmental impacts have been different if a lower maximum number of wells had been used?*

The maximum number of wells per pod was derived based on past experience within the Dixon Field and Drunkards Wash Unit (near Price, Utah). The best comparison to the geologic conditions known to exist in this areas is the Dixon Field CBM development of the early 1990s, just south of Atlantic Rim along the Wyoming/Colorado border. The companies believe the Drunkards Wash Unit near Price, Utah, is also a good productive analogy to the situation present within the Atlantic Rim CBM Project Area. The data from these two fields indicate that somewhere between 11 and 30 wells might be needed in a pod to adequately determine its economic viability. The BLM believes the 24-well target would allow the operators to obtain an indication of economic viability in a reasonable period of time. Each pod must be evaluated with an environmental analysis. If, through this analysis, 24 wells were believed to cause significant impacts to the environment or prejudice decisions to be made a result of the Atlantic Rim CBM Project EIS, a lower number of wells would be considered.

4) *The IDP specifies that required injection and monitoring wells will not count toward the well limit. Drilling and using injection and monitoring wells have environmental impacts; how would the overall assessment of impacts vary if injection and monitoring wells were counted toward the maximum number of wells in a pod?*

Only three monitoring wells will be required, and each pod will likely have two reinjection wells (some outside of the Colorado River Basin may have none). There is generally less than one acre of initial disturbance for each of these wells and a life-of-project disturbance of 0.005 acres for each well. This would result in an initial disturbance from all injection and monitoring wells of 23 acres (23 wells x 1 acre) and LOP of 0.115 acres (23 wells x 0.005). Disturbance from the two injection wells proposed for the Blue Sky Pod Project is described in the EA on page 2-7 and in Table 2-3. Even a slight increase in the number of injection or monitoring wells would only result in a minimal increase in disturbance; however, please note that all monitoring and injection wells will be subject to a NEPA analysis.

5) *The IDP specifies that a ¼-mile buffer is required between surface-disturbing activities and the Overland Trail. How would the impacts vary if this buffer were enlarged?*

Page 11 of the Great Divide RMP discusses protection of the Overland Trail as a management objective. However, the Blue Sky Pod Project does not overlap the Overland Train; therefore, this requirement will not impact the decision for this project.

6) *The IDP specifies that prior to completion of the Atlantic Rim CBM Project EIS, and with possible exceptions for Double Eagle's existing and proposed wells, water produced from coalbed methane wells located in the Colorado River Basin will be disposed of by reinjection. What are the environmental benefits and cost of this broad disposal decision?*

The requirement for reinjection for operations located within the Colorado River Basin is intended to allow CBM development without violating the requirements of the Clean Water Act. The environmental benefit would be to meet the objectives set

forth by the Colorado River Basin Salinity Forum and the Management Objectives for Soil, Water, and Air described on page 39 of the Great Divide RMP. Reinjection will prevent salt loading in watersheds within the Colorado River Basin. Furthermore, the impacts to groundwater were projected to be minimal because the State of Wyoming requires all formations accepting reinjected water contain water of lower quality than the water placed in the formation as described in the EA.

7) *The IDP provides that when a pod contains a prairie dog town, a black-footed ferret survey will clear the pod for a one-year period. Operators also have the option to complete the survey for the whole EIS area, clearing the area for the life-of-the-project. Would there be greater protection if the clearance period were shorter than a year? If the survey is done for the entire EIS area, why should the clearance be for the life-of-the project, given that ferrets could move into a prairie dog town after the initial survey, but long before disturbance of their new habitat?*

This requirement meets the USFWS guidance necessary to protect black-footed ferrets on public lands. The Service has reviewed this criteria and requested the BLM to add the last paragraph (page A-4, Blue Sky Pod EA) which discusses actions that the operators should take if a black-footed ferret or its sign is found, even after the area has been cleared.

8) *The IDP precludes drilling or disturbance in areas where any two or more big game crucial winter ranges overlap. What would be the environmental benefits of precluding disturbance where there was only a single species crucial winter range, particularly since under any timing stipulations that may apply, disturbance done in crucial winter range prior to the closure date need not be reclaimed before the next closure date.*

On page 30 of the Great Divide RMP, Management Actions, the RMP specifically states that surface-disturbing activities will be restricted and intensively managed to maintain important resource values in “overlapping crucial winter ranges for various big game species.”

The Rawlins Field Office has determined that the timing stipulations adequately protect big game crucial winter range for a single species. If it was determined, through further analysis, that additional mitigation was necessary to protect single species crucial winter range, the BLM could afford this protection.

9) *The IDP provides the BLM must approve a drilling schedule to ensure activities are limited within proven big game migration corridors at critical use times during the year. Why did the BLM indicate that it would only limit activities, rather than preclude all activities in the corridors at critical use times?*

The requirement was placed in the IDP to avoid simultaneous drilling in two adjacent pods if proven big game migration corridors were present. The EA on page 3-22 states that no known mule deer or elk migration routes exist in the Blue Sky Pod Project. However, there is potential that pronghorn antelope utilize routes both north and south of this pod to reach crucial winter range located west of the project area. Seasonal timing stipulations should adequately protect pronghorn antelope migrating into the project area. However, a schedule will be required if drilling should occur simultaneously in pods 6 & 7 during critical use times.

10) *The IDP requires the installation of fish passage structures for roads which cross drainages with fisheries concerns as identified by BLM. Have these drainages already been identified? What criteria where used? Was the public allowed to evaluate these designations? Was any environmental analysis done on which drainages were designated? Given that pipelines, power lines, and fiber optic lines will be buried and, where possible, will follow the road rights-of-way, what is to prevent trenching for these lines from destroying fisheries that the passage structures were intended to save?*

No roads within the Blue Sky Pod Project area are subject to this requirement. There are no specific drainage designations. If road construction must occur over a drainage with fisheries potential, the construction would be based on information gathered during the project onsite visit, and this information would be presented in the project EA.

11) *The IDP's definition of Sensitive Resource Areas, which requires protection with stipulations or by mitigation, does not include areas important for recreational use, areas of important scenic value, areas of solitude and lack of noise, or areas of fragile soils. What would be the environmental benefits of including these other resource values as sensitive areas which must be protected by stipulations or mitigation?*

The project area is managed for multiple use. There are no areas set aside for special management of sensitive soils within the project area. All of the Atlantic Rim exploratory pods are located in Visual Resource Management Class III. None of the pod areas lie within any area identified in the RMP as a special recreation area or contained in designated recreation sites. The concerns you identify are addressed through project-wide mitigation measures and procedures described in the Blue Sky EA on pages 2-13 and 2-18.

c. *The Blue Sky Pod EA extensively relies on the provisions in the IDP for directing development, as well as for assessing and mitigating the impacts of the development.*

The IDP is very important in providing guidance to the operators regarding exploration activities. The IDP identifies protective measures to meet 40 CFR 1506.1, but other authorities, rules, regulations, mitigation in the RMP, in addition to the IDP, played a role in determining where and what exploration activities would occur within the Blue Sky Pod Project .

Most of your discussion in this section appears to emphasize that the IDP restricts alternative formation. According to the H-1790-1, BLM NEPA Handbook, Chapter IV, Preparing Environmental Assessments, page IV-3, alternatives to the proposed action must be considered and assessed whenever there are unresolved conflicts involving alternative uses of available resources. "Public controversy or concern about a proposal does not necessarily mean that alternatives must be analyzed." The Handbook raises the question whether there are reasonable alternatives for satisfying the need for the proposed action, and **will these alternatives have meaningful differences in environmental effects.**

The Blue Sky Pod Project consists of the drilling of 24 CBM wells and associated facilities. As stated in response 10b3 above, BLM believes the 24-well target is consistent with other CBM fields with similar geologic conditions, and would allow the operators to obtain an

indication of economic viability in a reasonable period of time. Because the impacts from implementing this project were minimal, and no unresolved conflicts were apparent, no other reasonable alternatives were considered.

d. *The Blue Sky Pod EA violates the Federal Land Policy and Management Act of 1976 (FLPMA) which requires that decisions, permits, and other authorizations conform to the approved resource management plan. The Blue Sky Pod EA purports to be in conformance with the Great Divide RMP as required under 43 CFR 1610.5, yet the RMP does not even mention CBM as a possible land use.*

The RMP states that the entire planning area is open to oil and gas leasing and does not make a distinction as to whether oil and gas development is "conventional" or otherwise. The minerals management program policy and goals described in the RMP are to provide the opportunity for leasing, exploration, and development of oil and gas while protecting other resource values. CBM-related activity is not unanticipated just because the RMP does not use the specific words "coalbed methane." "Methane" and "natural gas" are used interchangeably regardless of the source. No specific formation, bed, or seam was identified in the RMP as being suitable or unsuitable for oil and gas development. Natural gas production operations are very similar, and CBM development is no exception. Development and production sequence described in the Oil and Gas Appendix in the Draft Environmental Impact Statement for the Medicine Bow-Divide Resource Management Plan (later the Great Divide RMP) describes typical development operations, even to the point that water may need to be removed during natural gas production. Therefore, even if coalbed methane has not been specifically mentioned, the activity is clearly consistent with the terms, conditions, and decisions of the approved plan [43 CFR 1610.0-5(b)].

e. *The Blue Sky Pod EA departs from the RMP in other respects that violate FLPMA.*

1) *The RMP specifies that access to the Atlantic Rim for recreation is of high importance; however, the Blue Sky Pod EA does not address how CBM drilling will affect access to the Atlantic Rim for recreation.*

The Blue Sky Pod is over 18 miles from the southernmost portion of the area referred to as Atlantic Rim. There are no plans to restrict use on any county road or BLM resource road as a result of implementing the Blue Sky project.

2) *The RMP states that surface disturbance from oil and gas exploration and development would be restricted in certain areas such as sage grouse leks and high priority habitat, yet Figure 2 of the Blue Sky Pod EA shows crucial pronghorn winter range, potential mountain plover habitat, white-tailed prairie dog colonies, and greater sage-grouse lek buffers as existing within the project area. This is not consistent with the RMP and is, therefore, in violation of FLMPA.*

No CBM drilling is allowed in any greater sage-grouse lek. In addition, drilling is restricted in these sensitive resource areas you describe under the terms described in lease stipulations, site specific COAs (Appendix D), and guidelines of the IDP. See responses to 3c, 7a, 7d, 9i, 9k, 9l, 10b8, and 10b9.

f. *The Blue Sky Pod EA violates NEPA by failing to consider other reasonable alternatives. By considering only a "No Action" Alternative to the proposed plan, the Blue Sky Pod EA effectively forces acceptance of the proposal as shaped by the IDP, so that the rights of leaseholders are not prejudiced. The EA only offers one choice, and that choice was shaped by BLM policy, in violation of NEPA and FLPMA.*

The CEQ states in its Forty Questions and Answers about NEPA Regulations (1981) that there are two distinct interpretations of the No Action Alternative. The first is that there is no change from the existing situation. This interpretation generally applies to planning decisions. The second interpretation is that the proposed activity (i.e., as described under the Proposed Action) would not take place. This does not mean, however, that activity associated with oil and gas development would never be allowed to occur in this area. Under the Mineral Leasing Act of 1920, as amended, the BLM cannot deny the lessee the right to develop somewhere within the leasehold. This right is supported by national mineral leasing policies and the regulations by which they are enforced, which recognize the statutory rights of lease holders to develop federal mineral resources to meet continuing national needs and economic demands as long as undue environmental degradation is not incurred.

However, this does not mean the No Action Alternative cannot be chosen by the decision-maker. If the components of the project described under the Proposed Action were such that the decision was made that environmental impacts were significant, either an environmental impact statement could be prepared, the project components could be changed, or additional mitigation proposed that would allow a determination of no significant impacts, or the decision-maker could choose the No Action Alternative and the project would not go forward as described. See response to 10c above.

g. *Another problem with the leases authorizing development of the Blue Sky Pod EA, is that these leases were never subject themselves to NEPA. Accordingly, when BLM issued these leases it made an irretrievable commitment of resources without first having evaluated those commitments and consequences under NEPA, in violation of the law.*

The Great Divide Draft Environmental Impact Statement (DEIS), Final Environmental Impact Statement (FEIS), and Record of Decision (ROD) are the NEPA documents associated with the Great Divide Resource Management Plan (RMP). The DEIS and FEIS assessed and disclosed the effects of oil and gas leasing and coal bed mining (Coal Appendix, Oil and Gas Appendix, Environmental Consequences) and evaluated alternatives. The RMP, page 30, under “Oil and Gas, Management Actions” states, in part, that the entire planning area is open to oil and gas leasing. The Blue Sky Pod leases were issued under the authority of the Great Divide Resource Management Plan and its associated NEPA documents and decisions.

The BLM’s ability to limit environmental harm within the Blue Sky Pod Project area is not impaired under the proposal, nor by the existing leases. Before disturbing the land, the operator must contact the BLM and provide a formal application for permit to drill (APD) detailing the proposed actions. The operator cannot proceed without approval by BLM of actions, including any necessary environmental analysis. FLPMA directs the BLM to manage the public lands in a manner that will protect the quality of the environment. BLM will not approve an APD that does not comply with this direction. With the use of lease terms, stipulations, and conditions of approval, operator proposals can normally be implemented in some form to accomplish their objectives. Under the terms of the lease, the operator has the right to drill and extract the oil and gas resources present within the lease area, while the BLM has the right, the ability, and the obligation to ensure environmental harm does not occur.

h. *The Blue Sky Pod EA violates NEPA because its analysis of cumulative impacts fails to thoroughly consider reasonably foreseeable future actions. The EA inappropriately narrows its assessment of cumulative impact by disregarding the pending proposal to permit up to*

3,880 CBM wells in the Atlantic Rim Project Area. Instead, the EA's cumulative impact analysis is limited to the maximum 200 CBM wells in the nine pods that the IDP allows. Segmentation of the cumulative impact analysis improperly ignores what are reasonably foreseeable actions.

At this point, the proposal to develop a 3,880 well field is not reasonably foreseeable. See response to 9g.

j. *PEDCO will be stimulating coal seams by hydraulic fracturing. This falls within Class II of the Underground Injection Control (UIC) program under the Safe Drinking Water Act and must be permitted by WOGCC. The EA does not include a detailed study of the types of fluids to be used in the analysis of all underground fractures and fissures between aquifers or a full analysis and monitoring program established for ensuring that all known or potential drinking water supplies are protected.*

Because PEDCO is currently seeing good results in the Sun Dog Pod, there are no immediate plans to fracture coal seams. However, it feels that if the seams need to be fractured, no matter what type of fluid is used for fracturing, the number one priority is to stay in the coal seam. Should fracturing occur in the sands surrounding the coal seam and water from these seams invade the coals, this could prove detrimental to the ability to remove water from these seams. Because fracturing will be isolated to coal seams, and because these seams are deep and isolated from those utilized for drinking water, no impacts are anticipated to drinking water supplies.

A groundwater monitoring program has been established as part of the Interim Drilling Policy, Attachment A, under the heading "Water Assessment/Monitoring Needs." There have been some recent changes to the data submission requirements. Attachment A and the letter relaying the approved changes to the water monitoring program can be seen in Appendix F of this Decision Record.

k. *On page 4-32 of the Blue Sky Pod EA, cumulative impacts of interim drilling activities on water resources assume that the strata into which produced water will be injected are sealed from adjacent aquifers. However, there is no discussion of alternate disposal of the waters should the strata not be sealed or if they will not take the water. Nor is there any discussion of putting water monitoring wells into the target aquifers adjacent to the coal seam. Cross-aquifer communication and contamination can occur through a variety of mechanisms. There is no background quality analysis of the water in the targeted injection strata but it is "anticipated that CBM produced water would be of equal or higher quality with regard to the class used defined by WDEQ" (page 4-7 of the EA).*

It appears as if the formation into which produced water injection will occur is sealed. The Wyoming Oil and Gas Commission requested that PEDCO obtain data to show that the water injected into the permitted injector well at the Sun Dog Pod well, ARFed 1691 8I, is actually staying in the Deep Creek formation at the permitted rate of injection. This was accomplished by running a temperature survey while injecting water at the permitted rate. The data proved without a doubt that the injected water was going into and remaining in the Deep Creek sand. This temperature survey is on file with the Oil and Gas Commission. The Oil and Gas Commission will require this test for injection wells in Blue Sky Pod if it appears as if migration or reinjection into the Deep Creek sand zone could occur.

The requirements for water monitoring during interim drilling (Appendix F of the DR) states that "an initial, properly collected and preserved, water-quality sample shall be obtained from each perforated interval for chemical analysis."

l. *According to the EA, on pages 3-24 and 4-15, no mountain plovers were located in the project area during a survey conducted in May of 2001, but the EA states on pages 3-24 and 4-15 that there is high quality mountain plover habitat. Since this species is proposed for listing as threatened under the Endangered Species Act, will there be monitoring for the presence of plovers throughout the lifetime of the project? There is no cumulative assessment of the impacts of roads on mountain plovers should they be present, and roads are identified as a risk factor as the plovers nest and forage in the bare ground along road verges.*

At this point, the operators are not required to survey for plovers in the pod areas, although potential habitat is noted during BLM onsite investigations and COAs will be placed on the APDs if habitat is found. The BLM has established survey routes through potential mountain plover habitat in the Atlantic Rim project area and has surveyed for the birds on the routes during the past two years, but no birds have yet been observed. Should exploration drilling prove economic reserves exist in the Atlantic Rim area, a wildlife monitoring plan will be prepared as part of the mitigation proposed in the EIS outlining the requirements for wildlife monitoring, including mountain plover.

With the exception of Pod 5, all of the pods can be accessed by existing county roads or BLM resource roads. New road construction during interim drilling activities would, in general, be limited to the spur roads required to access each well site.

An increase in traffic would be seen on existing county roads, but stipulations restricting construction activities during nesting periods in areas identified as plover habitat would serve to keep traffic at a level consistent with normal activities that would occur without the project and would minimize the potential for encounters with mountain plover during critical times.

The USFWS concurred that the project is not likely to jeopardize the continued existence of the mountain plover. See the USFWS statement in 7a.

m. *The EA states that no raptor nests were found during breeding season surveys in 2001. Will surveys occur through the life of the project? Considering that well-site facilities for productive wells will be in place for up to 20 years, these facilities will provide perch sites for raptors and, coupled with a nearby prairie dog complex, are likely to increase the use of the area by raptors.*

Surveys for raptors have been conducted by BLM in the Atlantic Rim project area for the past two years. Should exploration drilling prove economic reserves do exist in the Atlantic Rim area, a wildlife monitoring plan will be prepared as part of the mitigation proposed in the EIS that would outline the requirements for wildlife monitoring, including those for raptor surveys.

n. *Increased traffic on access roads will result in dust. The Blue Sky Pod EA states that dust abatement may be by use of water (but does not identify the water source), chemical dust suppressants, or other measures. However, there is no discussion of the effect of chemical runoff if chemical suppressants are used on verge vegetation.*

Use of water or other agents on project roadways requires a sundry notice submitted to the BLM. This requirement is a COA attached to the Master Surface Use Plan (see Appendix D). The proposal will be reviewed by BLM as the surface owner and also approved under the standards of the WOGCC. Water is the most likely source used for dust suppression; however, because of the limits set by the Colorado River Basin Salinity Forum, the chemical composition of the water used for this activity would be closely monitored.

o. *Fragmentation of sagebrush steppe habitats is known to have deleterious effects on sagebrush-obligate species such as sage sparrow, Brewer's sparrow, and sage thrasher. Oil and gas development has specifically been shown to negatively impact these species in Wyoming. There is no discussion of the cumulative impacts of roads within and presumably connecting the nine pods to such species. Moreover, if the pods are connected, there will be a greater likelihood that after the CBM project ends, ORV enthusiasts, hunters, and other recreational users will use the roads. The potential impact on sagebrush-obligate species by public use after the project is completed has not been evaluated.*

Page 4-17 of the EA acknowledges that sage sparrow and Brewer's sparrow may be present in the project area but, "Because of the small amount of disturbance associated with the project (78.5 acres), their inherent mobility, and the availability of suitable habitats on undisturbed land, the effects on these species should be minimal."

Because the pod itself will be accessed by the existing county road (CR 608), and all other proposed roads are spur roads that will access the well, road use will likely increase during project construction, but is anticipated to return to normal levels of use after the project is completed.

Transportation planning will be a integral part of the development of the Atlantic Rim project, and also a means of looking at access into pod areas. Currently, the majority of the interim drilling pods can be reached by using existing legal access, so the proliferation of several through roads as a result of these CBM exploration projects is not anticipated.

p. *The project area includes crucial pronghorn winter range. In western Wyoming it has been found that oilfield developments caused game animals to abandon portions of their winter range. However, the wildlife stipulations apply only during exploration and development, even though the harmful effects on wildlife would continue into production phase.*

Studies referenced in the *CD/WII DEIS* concluded that pronghorn in the Rattlesnake Hills area of Wyoming avoided areas within 0.6 miles of drilling or well maintenance operations. Studies in Texas and New Mexico found this distance to be 0.5 miles. However, other studies cited in the document indicated that, although some level of habitat displacement was noted in pronghorn due to oil and gas development, pronghorn returned to these habitats once the source of displacement left the area.

The analysis presented on page 4-13 of the Blue Sky Pod EA concludes pronghorn acclimated to increased traffic volumes and machinery as long as the traffic moved in a predictable manner. It is anticipated that each well location would be visited about every other day to ensure operations are proceeding in an efficient and safe manner. Most of the maintenance activity would be considered casual use and would likely occur at similar times of the day; increase in vehicle traffic from this activity is anticipated be limited to one or two vehicles per day.

The position presented is that seasonal closures to protect wildlife do not extend after the exploration and development phases are complete. It is also stated that the ability of the BLM to invoke seasonal closures expires once the production phase begins. This can be addressed by looking in Appendix I of the Great Divide RMP (p. 47). Some seasonal restrictions in the oil and gas lease stipulations contain the statement, "This limitation does not apply to maintenance and operation of producing wells." This statement was included because the stipulations were developed specifically for application to oil and gas leases at the time of issuance, not for activities associated with producing wells. At lease issuance, the only action that can be generally be contemplated is that exploratory drilling may occur

somewhere on the lease. Unfortunately, the provision has been interpreted by some people to mean seasonal restrictions disappear at the operational stage (i.e, if a producing well is obtained). It goes on to state that it must be understood that, at both the oil and gas exploration stage and the operation or development stages, additional site-specific development environmental analyses are conducted and any needed restrictions or mitigation identified become part of the operational or development plan. In the case of the Blue Sky Pod, these are described as COAs and are included as part of this Decision Record (see Appendix D). These COAs take into consideration site-specific needs, including pertinent lease stipulations. For example, if a well proposed for drilling is located within a leasehold that has a big game stip attached to it, but the actual operation is located two miles from designated crucial winter range, activities associated with drilling will not impact the range, and the crucial winter range stip will not be a COA for that particular well, although it remains on the lease. Conversely, if the project could affect the range, the stipulation would be a COA for the development of that well.

During the production phase, an operator is allowed to perform routine maintenance and monitoring, much the same as the general public (rancher, recreationists, hunters) would be allowed to use the area.

q. *The Blue Sky Pod EA does not adequately address the cumulative impacts of weed invasion into areas from which plant cover is removed though it does admit that the project area is vulnerable to infestations of invasive/noxious weeds and there is little weed impact at present. However, the EA overlooks the fact that roads enhance exotic species invasions. Trail and road verges are notorious for their susceptibility to weed invasion and establishment. There is also a high potential for weed seeds to be introduced by construction equipment and by gravel used for roadbeds. An additional concern would be the presence of the white-tailed prairie dog colonies and the semi-bare ground surrounding the burrows. These are susceptible to weed invasion. There is a discussion of monitoring and treating weeds in the construction area, but no discussion of monitoring the prairie dog colonies as well. There is no indication of who will do monitoring and how often it will occur.*

The subject of weed invasion and establishment is addressed in several places in the EA. Page 4-9 states, "Surface-disturbing activities could affect vegetation directly and indirectly by destroying individuals or their habitat and introducing weeds. Weedy species often thrive on disturbed sites such as road ROW's and out-compete more desirable plant species. Increased weed invasion may render a site less productive as a source of forage for wildlife and livestock." Weed monitoring would occur during drilling, production, and reclamation activities and weeds found would be eradicated following county control procedures. The analysis on this page concludes that properly reclaimed areas and the application of mitigation measures summarized in Chapter 2 would minimize the introduction of weed species.

Weed invasion on prairie dog colonies is not known to be a problem. In general prairie dogs locate towns on heavier soils with a minimum of vegetation. The prairie dog generally keeps the area barren and forages for both grasses and weeds, so that not much vegetation is ever observed on a colony.

r. *The surface use plan (Appendix B of the EA) for revegetation does not include replacement of lost sagebrush, nor does the EA address the effect of loss of sagebrush on sage-dependent species such as sage sparrow or Brewer's sparrow.*

Because of the small amount of disturbance associated with the project (78.5 acres), the fact that disturbance is dispersed over 1,921 acres, the inherent mobility of these species, and the availability of suitable habitats on adjacent, undisturbed land, the effects on these species should be minimal. See response to 10n.

s. *In the chapter of the EA discussing Environmental Consequences, it assumes all species will habituate to disturbance and that this will overcome the effects of displacement. But the EA provides no support for this contention except for pronghorn. Moreover, research cited states that pronghorn habituation to traffic can occur provided the traffic moves in a predictable manner. Since the project area is open to public use, traffic is likely to be unpredictable both as to type and timing.*

The CD/WII DEIS summarized several studies that have occurred over the past 25 years which examined impacts from oil and gas activity on big game animals. It was concluded that of the three big game species, it appeared that pronghorn antelope exhibited the least amount of displacement due to oil and gas and mining development activities. Studies conducted in Wyoming, New Mexico, and Texas (Gusey 1986; Guenzel 1987; Easterly et al. 1991) found that pronghorn returned to these habitats once the source of disturbance left the areas. Segrestrom (1982) and Deblinger (1988) determined that a large population of pronghorn populations inhabiting surface mine sites in Wyoming were relatively unaffected by mining activities and habituated to the presence of personnel and vehicles.

Mule deer are generally less sensitive to human disturbance than elk and, in some cases, may be less sensitive than pronghorn (Easterly et al. 1991). In the Rattlesnake Hills of Wyoming, mule deer did not avoid oil fields and may have habituated to human activity associated with petroleum extraction. Other studies conducted found that wintering mule deer in Montana were minimally affected by low levels of oil and gas development (Irby et al. 1988), while a study of development on Crooks Mountain in Wyoming did not observe a mule deer within 0.5 miles from a well construction site.

Elk tend to react less to traffic along roads than to concentrated areas of noise and activity such as well sites. The CD/WII DEIS reviewed studies that examined the displacement of elk due to oil and gas development activities and concluded that elk within that project area could be displaced an average of 1.5 miles from the well locations during construction, drilling, completion, and workover operations.

Because activities associated with the construction of this project are anticipated to be short in duration and would be restricted during critical times of the year, and with the implementation of measures described in Chapter 2 of the EA and COAs in Appendix D of the Decision Record, impacts to big game as a result of implementing the Blue Sky Pod project are anticipated to be minimal. See responses to 9h, 9p,10o.

t. *The EA concludes on page 4-34 that, "Only a very small proportion of the amount of available wildlife habitats within the Atlantic Rim Project Area would be affected. The capacity of the area to support various wildlife populations should remain essentially unchanged from current conditions." However, the combined effects of habitat conversion, displacement due to the effects of roads and traffic, and habitat fragmentation resulting from construction of CBM infrastructure, is likely to have long-term cumulative impacts by affecting abundance, distribution, community interactions, and community composition. Roads fragment habitats, increasing edge effect, which can provide heterogenity to the habitat in terms of food and*

cover resources. Many native, non-game species require contiguous, undisturbed habitat. Habitat is the single most important factor in the persistence of species populations and degradation, either through loss of quality or quantity, have been shown to negatively impact species persistence.

Cumulative, long-term effects on wildlife, in general, are discussed on page 4-34 and 4-35 of the EA. The cumulative long-term effects are expected to be minimal, as most species are expected to become accustomed to routine operations and maintenance activities. Approximately 101 acres of long-term disturbance within the ARPA are projected to result from these exploration projects. Another 350 acres of long-term disturbance are estimated to exist from past and current oil and gas related activities (0.01 percent of the ARPA). Displacement of wildlife due to road traffic is expected to be short-term. The 99.98 percent of the project area that is not proposed for disturbance from exploratory activities is expected to accommodate the long-term habitat needs of wildlife in the area. The abundance and distribution of habitat following the project disturbance is expected to support various wildlife populations at levels essentially unchanged from current conditions. Any fragmentation of the remaining, undisturbed habitat is not expected to have a cumulative, long-term effect (page 4-34 of the EA).

APPENDIX C

PROJECT-WIDE MITIGATION MEASURES AND PROCEDURES

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The following describes applicant-committed and agency-required measures and procedures to avoid or mitigate resource or other land use impacts. These measures and procedures will be referred to as Best Management Practices (BMPs) throughout this document. In addition to public lands, these mitigation measures and procedures will be applied on privately-owned surface unless alternate actions are specifically required by the involved private surface owners. An exception to a mitigation measure and/or design feature may be approved on public land on a case-by-case basis when deemed appropriate by the BLM. An exception will be approved only after a thorough, site-specific analysis determines that the resource or land use for which the measure was put in place is not present or will not be significantly impacted.

PRECONSTRUCTION PLANNING, DESIGN, AND COMPLIANCE MEASURES

1. PEDCO will designate a qualified individual to serve as compliance coordinator. This individual will be responsible for ensuring that all requirements of the APD and Plan of Development (MSUP, MDP, WMP, and Conditions of Approval) are followed.

2. PEDCO and the BLM will make onsite inspections of each proposed and staked facility site (e.g., well sites and other facilities), new access road, access road reconstruction, and pipeline alignment projects to develop site-specific recommendations and mitigation measures.

3. New road construction and maintenance of existing roads in the project area will be accomplished in accordance with BLM Manual 9113 standards for resource roads and construction details outlined in the Master Surface Use Plan (MSUP) and Conditions of Approval, unless private landowners, Carbon County, or the State of Wyoming specify otherwise.

4. Prior to construction, PEDCO will submit an APD package. This package will contain individual APDs for each drill site, Master Drilling Plan, Master Surface Use Plan, Water Management Plan, schematics of facilities, and ROW applications for pipelines, utilities, and access roads. APDs submitted by PEDCO will show the layout of the drill pad over the existing topography, dimensions of the pad, cross sections of the cut and fill (when required), location and dimensions of reserve pit(s), and access road locations.

5. PEDCO will slope-stake construction activities when required by the BLM (e.g., steep and/or unstable slopes) and receive approval from the BLM prior to the start of construction.

6. The BLM will require the road to be crowned and ditched with a 0.03 to 0.05 ft crown, and the topsoil will be pulled back down on the cut slope so there is no berm left at the top of the cut slope.

7. The BLM will require that culverts be covered with a minimum of 12 inches of fill or one-half the pipe diameter, whichever is greater. The inlet and outlet will be set flush with existing ground and lined up in the center of the draw. Before backfilling, the bottom of the pipe will be bedded on stable ground not containing expansive or clay soils, protruding rocks that will damage the pipe, or unevenly-sized material that will not form a good seat for the pipe. The site will be backfilled with unfrozen material and rocks no larger that two inches in diameter. Care will be exercised to thoroughly compact the backfill under the haunches of the conduit. The backfill will be brought up evenly in six inch layers on both sides of the conduit.

8. Additional culverts will be placed in the existing access road as needed or directed by the BLM.

9. The BLM will require surfacing of the access road with an appropriate grade of aggregate or gravel to a depth of four inches, prior to moving the drilling equipment/rig onto the pad.

10. The BLM will require that access roads be maintained in a safe and usable condition. A regular maintenance program will include, but is not limited to, blading, ditching, culvert installation, and surfacing.

11. If snow removal is required outside new and existing roadways, BLM will require that snow removal equipment be equipped with shoes to keep the blade off the ground surface. If the surface of the ground is uneven, the BLM will require that special precautions be undertaken to ensure that equipment blades do not destroy vegetation.

12. The BLM will require wing ditches be constructed, as necessary, to divert water from road ditches.

RESOURCE-SPECIFIC REQUIREMENTS

PEDCO proposes to implement the following resource-specific mitigation measures, procedures, and BLM management requirements on public lands.

Geology/Minerals/Paleontology

Mitigation measures presented in the soils and water resources sections of this EA will avoid or minimize many of the potential impacts to the surface mineral resources. Protection of subsurface mineral resources from adverse impacts will be provided by BLM and WOGCC casing and cementing policies.

Scientifically-significant paleontological resources potentially occurring within the Lewis Shale, the only geologic formation of concern which underlies the project area, will be protected through the following mitigation measures:

1. If recommended by the BLM, each proposed facility located in areas having known and potential vertebrate paleontological resources will be surveyed by a BLM-approved paleontologist prior to surface disturbance (BLM 1987 and 1990).

2. Discovery. Contingency will be made for the accidental discovery of significant fossils by project personnel. If fossils are discovered by construction personnel during implementation of the project, the BLM will be notified immediately. If the fossils could be adversely affected by construction, construction activities will be redirected until a qualified paleontologist has determined the importance of the uncovered fossils, the extent of the fossiliferous deposits, and has made or implemented recommendations regarding further mitigation.

3. Field Survey. No specific data currently exists on deposits of high or undetermined paleontologic potential in project area. For that reason, field survey for paleontologic resources will be conducted on a case-by-case basis, as directed by the BLM, in areas where surface exposures of the Browns Park, Green River, or Wasatch Formations occur. Field survey may result in the identification of additional mitigation measures to lessen adverse impacts to fossil resources. This mitigation may include collection of additional data or representative samples of fossil material, monitoring excavation, or avoidance. In some cases, no action beyond that conducted during the field survey may be necessary.

A report will be submitted to the BLM following the completion of each field survey. That report will detail the results of the survey, including a list of fossils collected, if any, and may include recommendations for additional mitigation. If significant fossils are collected, the report must document the curation of specimens into the collections of an acceptable museum repository and contain appropriate geologic records for the specimens.

Air Quality

1. All BLM-conducted or authorized activities must comply with applicable local, state, tribal and federal air quality regulations and standards. PEDCO will adhere to all applicable ambient air quality standards, permit requirements (including preconstruction, testing, and operating permits), motorized equipment and other regulations, as required by the State of Wyoming, Department of Environmental Quality, Air Quality Division (WDEQ-AQD).

2. PEDCO will not allow the burning of garbage or refuse at well locations or other facilities. Prior to any flaring, the WDEQ-AQD will be notified as required by Wyoming Air Quality Standards and Regulations, Chapter 1, Section 5, *Reporting Guidelines for Well Flaring and Venting.*

3. On federal land, PEDCO will initiate immediate abatement of fugitive dust (by application of water, chemical dust suppressants, or other measures) when air quality, soil loss, or safety concerns are identified by the BLM or the WDEQ-AQD. These concerns include, but are not limited to, potential exceedances of applicable air quality standards. The BLM will approve the control measure, location, and application rates. If watering is the approved control measure, the operator must obtain the water from state-approved source(s).

Soils

1. Reduce the area of disturbance to the absolute minimum necessary for construction and production operations while providing for the safety of the operation.

2. Where feasible, locate pipelines immediately adjacent to roads to avoid creating separate areas of disturbance and in order to reduce the total area of disturbance.

3. Avoid using frozen or saturated soils as construction material.

4. Minimize construction activities in areas of steep slopes.

5. Design cut slopes in a manner that will allow retention of topsoil, use of surface treatment such as mulch, and subsequent revegetation.

6. Selectively strip and salvage topsoil or the best suitable medium for plant growth from all disturbed areas. Remove and conserve topsoil to a minimum depth of six inches and a maximum of twelve inches from all well pads, unless otherwise agreed to by the BLM and the operator.

7. Where possible, minimize disturbance to vegetated cuts and fills on existing improved roads.

8. Install runoff and erosion control measures such as water bars, berms, and interceptor ditches if needed.

9. Install culverts for ephemeral and intermittent drainage crossings. Design all drainage crossing structures to carry the 25-year discharge event, or as otherwise directed by the BLM.

10. Implement minor routing variations during access road layout to avoid steep slopes adjacent to ephemeral or intermittent drainage channels. Where possible, maintain a 100-foot wide buffer strip of natural vegetation (not including wetland vegetation) between construction activities and ephemeral and intermittent channels.

11. Include adequate drainage control devices and measures in the road design (e.g., road berms and drainage ditches, diversion ditches, cross drains, culverts, out-sloping, and energy dissipators) at sufficient intervals and intensities to adequately control and direct surface runoff above, below, and within the road environment to avoid erosive concentrated flows. In conjunction with surface runoff or drainage control measures, use erosion control devices and measures such as temporary barriers, ditch blocks, erosion stops, mattes, mulches, and vegetative covers. Implement a revegetation program as soon as possible to re-establish the soil protection afforded by vegetation.

12. Upon completion of construction activities not specifically required for production operations, restore topography to near pre-existing contours at the well sites, along access roads and pipelines, and other facilities sites; replace up to six inches of topsoil or suitable plant growth material over all disturbed surfaces; apply fertilizer as required; seed; and mulch.

Water Resources

Other mitigation measures listed in the Soils and Vegetation/Wetlands/Noxious Weed sections of this EA will also apply to water resources.

1. Limit construction of all drainage crossings to no-flow periods or low-flow periods.

2. Minimize the area of disturbance within perennial, ephemeral, and intermittent drainage channel environments.

3. Prohibit construction of well sites and other nonlinear features within 500 feet of surface water and/or riparian areas. Possible exceptions to this will be granted by the BLM for linear features based on an environmental analysis and site-specific mitigation plans.

4. Design channel crossings to minimize changes in channel geometry and subsequent changes in flow hydraulics.

5. Implement minor routing variations during access road layout to avoid steep slopes adjacent to ephemeral or intermittent drainage channels. Where possible, maintain a 100-foot wide buffer strip of natural vegetation(not including wetland vegetation) between construction activities and ephemeral and intermittent channels.

6. Design and construct interceptor ditches, sediment traps, water bars, silt fences, and other revegetation and soil stabilization measures as needed.

7. Construct channel crossings by pipelines such that the pipe is buried a minimum of four feet below the channel bottom.

8. Regrade disturbed channel beds to the original geometric configuration containing the same or very similar bed material.

9. Case wells during drilling, and case and cement all wells in accordance with Onshore Order No. 2 to protect all high quality water aquifers. High quality water aquifers are aquifers with known water quality of 10,000 TDS or less. Include well casing and welding of sufficient integrity to contain all fluids under high pressure during drilling and well completion. Further, wells will adhere to the appropriate BLM cementing policy.

10. Construct the reserve pits in cut rather than fill materials. Compact and stabilize fill material as needed. Inspect the subsoil material of the pit to be constructed in order to assess soil stability and permeability and determine whether reinforcement and/or lining are required. If lining is required, line the reserve pit with a reinforced synthetic liner at least 12 mils in thickness and a bursting strength of 175 x 175 pounds per inch (ASTMD 75179). Consideration should be given to use of closed or semi-closed drilling systems in situations where a liner may be required.

11. Maintain two feet of freeboard on all reserve pits to ensure the reserve pits are not in danger of overflowing. Shut down drilling operations until the problem is corrected if leakage is found outside the pit.

12. Extract hydrostatic test water used in conjunction with pipeline testing and all water used during construction activities from sources having sufficient quantities and appropriation permits approved by the State of Wyoming.

13. Discharge hydrostatic test water in a controlled manner onto an energy dissipater. The water is to be discharged onto undisturbed land that has vegetative cover, if possible, or into an established drainage channel. Prior to discharge, a General Permit Authorization of Temporary Discharge will be obrained from WDEQ/WQD, which establishes pollutant limits. Discharge water may need to be treated, filtered, or suspended particles settled, to meet the criteria established in the permit. If discharged into an established drainage channel, the rate of discharge will not exceed the capacity of the channel to safely convey the increased flow. Coordinate all discharge of hydrostatic test water with the WDEQ/WQD and the BLM.

14. Discharge all concentrated water flows within access road ROWs onto or through an energy dissipator structure (e.g., riprapped aprons and discharge points) and discharge into undisturbed vegetation.

15. Develop and implement a pollution prevention plan (PPP) for storm water runoff at drill sites as required per WDEQ storm water permit requirements under the National Pollution Discharge Elimination System (NPDES). All required WDEQ permits will be in place prior to discharge.

16. Exercise stringent precautions against pipeline breaks and other potential accidental discharges of toxic chemicals into adjacent streams. If liquid petroleum products are stored onsite in sufficient quantities (per criteria contained in 40 CFR Part 112), a Spill Prevention Control and Countermeasures (SPCC) plan will be developed in accordance with 40 CFR Part 112, dated December 1973.

17. Coordinate all crossings or encroachments of waters of the U.S. with the U.S. Army Corps of Engineers (COE).

18. Any changes in the produced water disposal method or location must have written approval from the BLM before the changes take place.

Vegetation/Wetlands/Noxious Weeds

Other mitigation measures under Soils and Water Resources of this EA will also apply to vegetation and wetlands.

1. File noxious weed monitoring forms with the BLM and implement, if necessary, a weed control and eradication program.

2. Evaluate all project facility sites for occurrence and distribution of waters of the U.S., special aquatic sites, and jurisdictional wetlands. All project facilities will be located out of these sensitive areas. If complete avoidance is not possible, minimize impacts through modification and minor relocations. Coordinate activities that involve dredge or fill into wetlands with the COE.

3. On BLM lands, an approved Pesticide Use Proposal will be obtained before the application of herbicides or other pesticides for the control of noxious weeds.

4. Disturbed areas will be seeded and stabilized in accordance with BLM-approved reclamation guidelines.

Range Resources and Other Land Uses

Mitigation requirements listed under Soils, Vegetation/Wetlands/Noxious Weeds, and Wildlife sections in this analysis also apply to Range Resources and Other Land Uses.

1. PEDCO will coordinate with the affected livestock operators to ensure that livestock control structures remain functional (as directed by the livestock operator) during drilling and production operations and to coordinate timing of planned activities.

2. When necessary, traffic control and speed limits will be used to limit potential conflicts.

Wildlife

1. During reclamation, establish a variety of forage species that will return the land to a condition approximate or equal to that which existed prior to disturbance .

2. Prohibit unnecessary off-site activities of operational personnel in the vicinity of the drill sites. Inform all project employees of applicable wildlife laws and penalties associated with unlawful take and harassment.

3. Limit construction activities within big game crucial winter range from November 15 to April 30, per BLM authorizations.

4. Complete a raptor survey prior to construction to ensure that well sites are located away from potential conflict areas.

5. Survey and clear well sites within one mile of raptor nests identified in the raptor survey prior to the commencement of drilling and construction during the raptor nesting period (February 1 through July 31).

6. When an “active” raptor nest is within 0.75 to 1 mile (depending on species and line of sight) of a proposed well site, restrict construction during the critical nesting season for that species. For listed and BLM sensitive species (see Chapter 3), the distance should be increased to within one mile of a proposed well site.

7. To determine potential nesting activity, raptor nests must be inventoried annually in areas where work may be occurring during the raptor nesting period from February 1 to July 31.

8. Do not perform construction activities anytime within 0.25 mile of existing greater sage-grouse leks.

9. Provide protection for greater sage-grouse leks during the breeding, egg-laying, and incubation period (March 1 through June 30) by restricting construction activities within a two-mile radius of active greater sage-grouse leks. Exceptions may be granted if the activity will occur in unsuitable nesting habitat.

10. For the protection of livestock and wildlife, all pits and open cellars shall be fenced. Fencing shall be in accordance with BLM specifications. Netting shall be placed over all production pits to eliminate any hazardous substances [CERCLA Section 101(14)] as determined by visual observation or testing. The mesh diameter shall be no larger than one inch.

Fisheries

1. No fisheries mitigation is needed beyond that indicated under Water Resources and Special Status Species section.

Special Status Species

Special Status Plants

1. Employ site-specific recommendations developed by the BLM IDT for staked facilities.

2. Minimize impacts due to clearing and soil handling.

3. Monitor and control noxious weeds.

4. Comply with Section 404(b)(1) guidelines of the federal Clean Water Act (CWA).

5. Perform clearance surveys for plant species of concern.

Special Status Animals

1. If the project will lead to a water depletion (consumption) in the Colorado River system, impacts to the bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker will need to be evaluated. Any actions that may result in a water depletion to the Colorado River system will need to be described. Water data has been collected and tests are underway to determine if water from the Mesaverde Group is connected to surface waters associated with the Colorado River system. Results of the testing will be submitted to the BLM. BLM staff will review the data submitted and, if necessary, will submit the data to the USFWS for a final determination. If data indicate there is a connectivity between the waters produced concurrent with CBM production and the Colorado River system and the project will result in depletion of waters, formal consultation with the USFWS will be initiated. The project will be approved pending consultation as long as no discharge occurs.

Recreation

Measures under Wildlife, Transportation, Soils, Health and Safety, and Water Resources sections of the EA apply to Recreation.

1. Minimize conflicts between project vehicles and equipment and recreation traffic by posting appropriate warning signs, implementing operator safety training, and requiring project vehicles to adhere to low speed limits.

Visual Resources

1. Utilize existing topography to screen roads, pipeline corridors, drill rigs, wellheads, and production facilities from view.

2. Paint well and central facilities site structures with flat colors (e.g., Carlsbad Canyon or Desert Brown) that blend with the adjacent surrounding undisturbed terrain, except for structures that require safety coloration in accordance with Occupational Safety and Health Administration (OSHA) requirements.

Cultural Resources

1. If a site is considered eligible for, or is already on the National Register of Historic Places (NRHP), avoidance is the preferred method for mitigating adverse effects to that property.

2. Mitigation of adverse effects to cultural/historical properties that cannot be avoided will be accomplished by the preparation of a cultural resources mitigation plan.

3. If cultural resources are discovered at any time during construction, all construction activities will halt and the BLM will be immediately notified. Work will not resume until a Notice to Proceed is issued by the BLM.

Socioeconomics

1. Implement hiring policies will encourage the use of local or regional workers who will not have to relocate to the area.

2. Coordinate project activities with ranching operations to minimize conflicts involving livestock movement or other ranch operations. This will include scheduling of project activities to minimize potential disturbance of large-scale livestock movements. Establish effective and frequent communication with affected ranchers to monitor and correct problems and coordinate scheduling.

3. PEDCO and its subcontrators will obtain Carbon County sales and use tax licenses for purchases made in conjunction with the project so that project-related sales and use tax revenues will be distributed to Carbon County.

Transportation

1. Existing roads will be used as collectors and local roads whenever possible. Standards for road design will be consistent with BLM Road Standards Manual Section 9113.

2. Roads not required for routine operation and maintenance of producing wells and ancillary facilities will be permanently blocked, reclaimed, and revegetated.

3. Areas with important resource values, steep slopes, and fragile soils will be avoided where possible in planning for new roads.

4. Permits are required from Carbon County for any road access to or across a county road or for any pipeline crossing of a county road. These permits should be acquired prior to construction of additional roads. All roads on public lands not required for operation and maintenance of field production should be permanently blocked, recontoured, and seeded. Roads on private lands should be treated similarly, depending on the desires of the landowner.

5. PEDCO will be responsible for preventive and corrective maintenance of roads in the project area throughout the duration of the project. This may include blading, cleaning ditches and drainage facilities, dust abatement, noxious weed control, or other requirements as directed by the BLM or the Carbon County Road and Bridge Department.

6. Except in emergency situations, access will be limited to drier conditions to prevent severe rutting of the road surface. Culverts will be installed where needed to allow drainage in all draws and natural drainage areas. Low water crossings will be utilized where applicable. Onsite reviews will be conducted with BLM personnel for approval of proposed access prior to any construction.

Health and Safety

Measures listed under the Air Quality and Water Quality sections also apply to Health and Safety.

1. Sanitation facilities installed on the drill sites and any resident camp site locations will be approved by the WDEQ.

2. To minimize undue exposure to hazardous situations, the operator will comply with all existing applicable rules and regulations (i.e., Onshore Orders, OSHA requirements) that will preclude the public from entering hazardous areas and place warning signs alerting the public of truck traffic.

3. Haul all garbage and rubbish from the drill site to a state-approved sanitary landfill for disposal. Collect and store any garbage or refuse materials on location in containers approved by the BLM prior to transport.

4. During construction and upon commencement of production operations, PEDCO will have a chemical or hazardous substance inventory for all such items that may be at the site. PEDCO will institute a Hazard Communication Program for its employees and will require subcontractor programs in accordance with OSHA 29 CFR 1910.1200. These programs are designed to educate and protect the employees and subcontractors with respect to any chemicals or hazardous substances that may be present in the work place. It will be required that, as every chemical or hazardous material is brought on location, a Material Safety Data Sheet (MSDS) will accompany that material and will become part of the file kept at the Blue Sky Pod field office as required by 29 CFR 1910.1200. All employees will receive the proper training in storage, handling, and disposal of hazardous substances.

5. Spill Prevention Control and Countermeasure Plans will be written and implemented as necessary, in accordance with 40 CFR Part 112, to prevent discharge into navigable waters of the United States.

6. If quantities exceeding 10,000 pounds or the threshold planning quantity (TPQ) as designated by the Rawlins Field Office are to be produced or stored in association with the project, chemical and hazardous materials will be inventoried and reported in accordance with the Superfund Amendments

and Reauthorization Act (SARA) Title III. 40 CFR Part 335. The appropriate Section 311 and 312 forms will be submitted at the required times to the state and county Emergency Management Coordinators and the local fire departments.

7. Any hazardous wastes, as defined by the Resource Conservation and Recovery Act (RCRA), will be transported and/or disposed of in accordance with all applicable federal, state, and local regulations.

8. All storage tanks and compressor facilities, designed to contain oil, glycol, produced water, or other fluid which may constitute a hazard to public health or safety, shall be surrounded by a secondary means of containment for the entire contents of the largest single tank in use, plus one foot of freeboard. PEDCO will utilize two-foot berms around affected storage tanks and facilities. The containment or diversionary structure shall be impervious to any oil, glycol, produced water, or other toxic fluid for 72 hours and will be constructed so that any discharge from a primary containment system will not drain, infiltrate, or otherwise escape to groundwater, surface water, or navigable waters before cleanup is completed.

Noise

1. Muffle and maintain all motorized equipment according to manufacturers' specifications.

2. In any area of operations (drill site, compressor station) where noise levels may exceed federal OSHA safe limits, PEDCO will provide and require the use of proper personnel protective equipment by employees.

3. The BLM will require that noise levels be limited to no more than 10 dBA above background levels at greater sage-grouse leks located on public lands. In order to comply with the above noise level limits, BLM will require that compressor engines located on public lands be enclosed in a building and located at least 600 feet away from sensitive receptors or sensitive resource areas.

APPENDIX D

MASTER SURFACE USE PLAN
INCLUDING
BLM CONDITIONS OF APPROVAL

PETROLEUM DEVELOPMENT CORPORATION
BLUE SKY POD CBM PROJECT
CARBON COUNTY, WYOMING

MASTER SURFACE USE PROGRAM
FOR
APPLICATIONS FOR PERMIT TO DRILL (APDS)

Land Involved:

Sec. 32 & 33
T.16N., R.91W., 6th P.M.

Sec. 4, 5, 8, 9 & 16
T.15N., R.91W., 6th P.M.

BLM Leases (Wells):

WYW 141276	**WYW 141277**	**WYW 148481**
ARFederal 1591-1-5	ARFederal 1591-3-5	ARFederal 1591-3-9
ARFederal 1591-7-5	ARFederal 1591-5-5	ARFederal 1591-5-9
ARFederal 1591-9-5	ARFederal 1591-1-8	ARFederal 1591-13-9
ARFederal 1591-11-5	ARFederal 1591-7-8	
ARFederal 1591-13-5	ARFederal 1591-11-9	
ARFederal 1591-15-5	ARFederal 1591-15-9	
ARFederal 1591-3-8		
ARFederal 1591-5-8		
ARFederal 1591-9-8		
ARFederal 1591-15-8		

PROJECT DESCRIPTION

Petroleum Development Corporation (PEDCO) Blue Sky Coalbed Methane (CBM) Project is located approximately 18 miles north-northeast of Baggs, Wyoming near the intersection of SH 789 and Carbon County Road 608 (Dad Road). Blue Sky is one of nine pods that comprise the Atlantic Rim Interim Drilling CBM Project. All 23 of the proposed CBM well sites and one existing CBM well site in the Blue Sky POD are located on surface ownership lands administered by the Bureau of Land Management (BLM) Rawlins Field Office. A total of 19 of the proposed wells would develop Federal minerals. The remaining four proposed wells would develop State minerals. The existing Blue Sky POD well, S&W State 1-16, is located on State of Wyoming mineral ownership lands. Plans for two injection wells were submitted separately.

Name, number, location, and lease information for the proposed wells are listed in Table 1 - Blue Sky CBM Project Well Information accompanying this Master Surface Use Program (MSUP). Refer to the enclosed BLM Application for Permit to Drill (APD) Form 3160-3 for each federal well, and Well Survey Plats.

CBM wells are currently planned on WYW141276, WYW141277, WYW148481, and State Lease 94-00401. The federal leases contain special timing stipulations that protect big game crucial winter range (November 15 through April 30), and sage grouse and raptor nesting (February 1 through July 31).

Only access roads cross other leases in the project area. Leases WYW148482 and WYW148483 contain all three stipulations listed above. Only the big game crucial winter range and the sage grouse and raptor nesting stipulations apply to WYW127817 and WYW128663. Lease WYW128134 contains one stipulation, the sage grouse and raptor nesting timing limitation. Refer to the attached Project Map for all lease boundaries.

The primary targeted reservoir in the Blue Sky POD is coal seams within the Mesaverde Group. Drill site locations will be on approved 80-acre spacing. All unproductive wells will be plugged and abandoned as soon as practical after the conclusion of production testing. Productive wells may be shut-in temporarily for gas pipeline connections and/or Sundry Notices under review by the BLM for production activities and facilities.

Blue Sky POD contains a total of approximately 1,921 acres. Of that total area, an estimated 28.8 acres or 1.5 percent will be temporarily disturbed during drilling at the CBM well sites (1.25 acres per well), while 5.8 acres will be disturbed for the completed well sites (0.25 acres per well). The compressor site will disturb 1.5 acres. Each injection well will add 1.0 acre and each water transfer facility will add 1.0 acre to this figure. Refer to the attached diagrams for all pad dimensions.

Approximately 34.9 acres will be disturbed by the construction of the proposed access routes and water/gas gathering lines. This figure is based on a 20-foot wide disturbance area for roadways and a 15-foot wide disturbance area for gas and water flowlines and electric lines. A proposed sales pipeline would disturb an estimated 3.1 acres during construction. Refer to the attached Project Map for the location of all access routes and gatherings lines. This Master Surface Use Plan (MSUP) is intended to serve as the Right-of-Way (ROW) application for the gas lines, water lines, access roads to well locations, access road to the compressor station, and electric lines in the POD. Gas lines will require a 30-foot right-of-way, water lines a 20-foot right-of-way, electric lines a 10-foot right-of-way, and the sales pipeline a 50-foot right-of-way.

Coal bed methane (CBM) is naturally adsorbed to the surfaces of the coal matrix and typically is not free to migrate in the subsurface until pressure is relieved. Generally speaking, hydrostatic head provides the pressure that keeps the majority of the CBM adsorbed to the coal. CBM is liberated from the coal matrix by the withdrawal of water, which in turn reduces the hydrostatic head present in the coal formation. Once a “critical” subsurface coal formation pressure is reached as water is pumped from the coal formation, CBM is free to migrate. CBM will then flow or can be pumped to the surface through the wellbore.

PEDCO plans to spud the wells during fall 2001. Drilling and testing activities are expected to occur over several months. Wet gas from the productive wells will be routed to a compressor station. Produced water will be gathered from the well sites and routed to two approved injection wells for disposal. The wells will be drilled through the coal seam formations. The coal seams will be exposed to the wellbore through perforation of casing.

The wells may be tested for a period of several months. Well testing involves pumping and testing water from each well and determining its capacity to produce natural gas. It is anticipated that well testing will be completed within six to twelve months. If unproductive, the drill holes will be plugged and abandoned in accordance with WOGCC rules and regulations and BLM guidance, as soon as practicable after the conclusion of well testing. If productive, natural gas will be collected and transported via buried pipelines to a compressor station, where flow will be measured.

For about half of the project wells, this measurement location will be off-lease and will require a variance from Onshore Order #5. This request for variance, along with a description of the measurement equipment, will be submitted in a Sundry Notice if the wells are deemed producible by PEDCO. Table 1 contains measurement location information for each well.

During well testing associated with this project, natural gas (e.g. CBM), to the extent it is produced, will be vented or flared on-location in accordance with the applicable BLM Onshore Orders and Notices To Lessees, and Wyoming Oil & Gas Conservation Commission (WOGCC) regulations, and authorized by the WOGCC and the BLM in Sundry Notices. During drilling and testing, produced water from the proposed wells will be transported to one of two approved injection wells for disposal.

Oil and gas activities in Wyoming are managed by the WOGCC. All PEDCO's operations, and those of its contractors, will be conducted in accordance with all BLM and WOGCC rules and regulations.

1. Existing Roads

The project area is accessible from Baggs, Wyoming, by traveling approximately 20 miles north on SH 789 to the intersection with Carbon County Road 608 (Dad Road), or south on SH 789 from Interstate 80 (I-80) to Dad Road. Turn east onto County Road 608 and travel approximately 6 miles to the project area.

Local roads are shown on the attached map of the project area. Existing roads and gates will be used when practical. All existing and proposed BLM roads shall be brought up to minimum standards for a Resource Road as found in BLM Manual 9113.

The existing roads will be maintained in the same or better condition as existed prior to the start of operations. Maintenance of the roads used to access the well locations will continue until final abandonment and reclamation of the well locations occur. A regular maintenance program will include, but is not limited to, blading, ditching, culvert installation, and gravel surfacing where excessive rutting or erosion may occur. Limiting or temporarily suspending vehicle access during adverse conditions will reduce excessive rutting or other resource damage that may be caused by vehicle traffic on access roads that are wet, soft, or partially frozen. If vehicles create ruts in excess of four inches deep, the soil shall be deemed too wet to adequately support vehicles and construction or routine maintenance activities shall be temporarily suspended.

Culverts will be placed in the existing BLM roads as the need arises or as directed by BLM's Authorized Officer. Gates and cattleguards will be installed where appropriate (refer to Project Map).

PEDCO shall share maintenance costs in dollars, equipment, materials, or labor proportionate to PEDCO's use with other authorized users. Upon request, the Authorized Office shall be provided with copies of any maintenance agreement entered into.

2. Access Roads to Be Constructed

Well Access

Access to the individual well sites will be provided by crowned and ditched roads surfaced with an appropriate grade of gravel. Surfacing of the access roads will be completed prior to moving the drilling equipment/rig onto the pad. The access roads will follow existing terrain and the travelway will be approximately 14 feet wide.

Certain access roads, or portions thereof, may not need to be surfaced prior to moving the drilling equipment/rig onto the well pad. Factors to be considered here are soil types, grade and the weather conditions that suggest excessive rutting or erosion may occur without gravel. These access roads, or portions thereof, will be identified during the on-site inspection.

The access roads will be constructed to minimum standards for a BLM Resource Road as outlined in BLM Manual 9113. The minimum travelway width of the road will be 14 feet with turnouts. No

structure will be allowed to narrow the road top. The inside slope will be 4:1. The bottom of the ditch will be a smooth V with no vertical cut in the bottom. The outside slope will be 2:1 or shallower. Turnouts will be spaced at a maximum distance of 1,000 feet and will be intervisible.

Topsoil and vegetation will be windrowed to the side of the newly constructed access roads. After the roads are crowned and ditched with a 0.03 to 0.05 ft. crown, the topsoil will be pulled back onto the cut slopes of the road right-of-way so there is no berm left at the top of the cut slope.

Drainage crossings on the access routes within the project area would either be low water crossings or crossings using culverts. Low water crossings would be utilized in shallow channel crossings and at crossings of the main channel. Culverts would be installed on smaller, steeper channel crossings. Topsoil would be saved before channel crossing construction occurs. The additional culverts would be placed as the need arises or as directed by the BLM's Authorized Officer. The total area to be disturbed would be flagged on the ground before construction begins.

Culverts will require a minimum of 12" of fill or ½ the pipe diameter whichever is greater. The inlet and outlet will be set flush with existing ground and lined up in the center of the draw. The bottom of the pipe will be bedded on good material before backfilling. Backfill with unfrozen material and no rocks larger than two inches in diameter. Care shall be exercised to thoroughly compact the backfill under the haunches of the conduit. The backfill shall be brought up evenly in 6" layers on both sides of the conduit and thoroughly compacted. A permanent marker will be installed at both ends of the culvert to help keep traffic from running over the ends. Culverts will be installed in a manner which minimizes erosion or head-cutting. This may include rip rapping or other measures as required.

Additional culverts will be placed in the access road as the need arises or as directed by BLM's Authorized Officer.

Where low water crossings are required, a 30" deep rock fill over geotextile through the drainage will be required. The rock fill will consist of 75 percent 3" to 10" diameter rough rock and 25 percent Wyoming Grading "W" Material to fill the voids. The geotextile shall be overlapping at all joints and extend beyond the rock fill. The top of the rock fill in the drainage bottom shall match the elevation of the natural drainage to allow for smooth flow with no unnatural scouring or water backup. Four inches of course gravel over the rock will be used for the surface.

The access roads will be winterized by providing a well-drained travelway to minimize erosion and other damage to the roadway or the surrounding public land.

Wing ditches will be constructed as deemed necessary to divert water from the road ditches. Wing ditches will be constructed at a slope of ½ percent to 1 percent.

A "plans-in-hand" review will be conducted with the drilling contractor prior to construction to review the access routes to the well sites. Directional markers will be set where needed and will be removed as soon as they are no longer needed.

No construction or routine maintenance activities shall be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts in excess of four inches deep, the soil shall be deemed too wet to adequately support construction equipment and construction/maintenance will be temporarily suspended.

Construction activity or routine maintenance will not be conducted using frozen or saturated soil material or during periods when watershed damage is likely to occur.

If snow removal outside the new and existing roadways is undertaken, equipment used for snow removal operations will be equipped with shoes to keep the blade off the ground surface. Special precautions will be taken where the surface of the ground is uneven to ensure that equipment blades no not destroy the vegetation.

Unless otherwise exempted, free and unrestricted public access will be maintained on the access road. All construction work will be accomplished as specified by the landowner and the BLM. If no specific BLM field survey requirements are provided, the design, field survey and construction requirement for BLM Resource Roads that are described in BLM Manual 9113 will be followed. Design drawings and templates will be submitted only if specifically required by the BLM.

New access routes will be sited to avoid areas susceptible to increased resource damage from the proposed action, such as areas of steep terrain or poor vegetative cover. Every effort will be made to minimize the amount of cut-and-fill construction needed to maintain safe, environmentally sound, year-round access to the well sites. The special Conditions of Approval specified for this POD by the BLM will be implemented.

Compressor Site Access

An all weather road currently exists to the compressor site and has a travel width of approximately 14 feet. All equipment and vehicles will be confined to this travel corridor and other areas specified in the POD. All disturbances related to this access road will be confined within the travel corridor.

3. Location of Existing Wells

One permitted water well is located within one mile of the project area (Table 2, Permitted Water Wells Within One Mile of the Blue Sky Project Area). Note that this well is not located within the inferred circle of influence (within a half-mile radius) of any individual proposed CBM well. This information, including the well site and other pertinent information, was obtained from the Wyoming State Engineer's Office (WSEO).

The enclosed project map depicts locations of disposal, drilling, producing, injection, and abandoned oil and gas wells within one mile of the project wells. The well locations were obtained by a search of the WOGCC website.

4. Location of Existing and/or Proposed Facilities, If Wells Are Productive

On Well Pad

Should drilling result in established commercial production, the wellhead will require an area of approximately 15 feet by 15 feet. The surface equipment at each CBM well will consist of the wellhead and an insulated wellhead cover. Depending on site-specific conditions, the housing will be painted either Carlsbad Canyon tan, color 2.5Y 6/2, or Desert Brown, color 10YR 6/3, of the “Standard Environmental Colors,” unless otherwise specified by the BLM. Each productive well is expected to require the installation of an electric submersible pump below ground level that will be used to produce water necessary to lower pressure with the coal seams. A schematic of the Typical CBM Well Site is attached to the MSUP.

During drilling and testing of each well a temporary generator may be used at the well site. If the well was productive, it would be shut-in until production facilities are constructed. After construction of the production facilities, a temporary generator would be centrally located and used until permanent electrical services were installed.

In order to minimize surface disturbance, the operator shall utilize wheel trenchers or ditch witches, where possible, to construct all pipeline trenches associated with this project. Track hoes or other equipment will be used where topographic or other factors require their use.

The operator shall submit a Sundry Notice for approval prior to construction of any new surface-disturbing activities on-lease that are not specifically addressed in the Master Surface Use Plan or individual APDs.

Off Well Pad/Compressor Station/Water Transfer Facilities

The compressor site facility is expected to be constructed within an approximate area of 200 feet by 200 feet (see attached Typical Compressor Station & Meter Facility). About one-half of the compressor site will be affected by the construction, maintenance, and operation of the facility. The compressor site facility will be of all-weather construction, having a thick layer of gravel over the pad site. Topsoil will be removed and conserved for later reclamation activities. The compressor site will consist of an insulated header building containing allocation meters for each well. The header building will also contain a dehydrator that will remove water from the wet gas stream. The water will be pumped from the header building to an approved injection well. If different production facilities are required, plans will be submitted in a Sundry Notice. In addition to the facilities on the pad, PEDCO will construct drainage ditches to divert stormwater away from the compressor station pad.

Approval of this APD includes approval for Onshore Order #7 to dispose of produced water. All produced water will be injected into either the Federal 1591-8I or Federal 1591-9I injection well unless otherwise authorized. Any changes in the produced water disposal method or location must have written approval from BLM's authorized officer before the changes take place.

Water produced at the well sites will be gathered and transported to the injection wells for disposal. The injection wells will be drilled, cased, and cemented from TD to surface (see attached schematic of the injection well). The primary injection objectives are the Cherokee Sandstone (approximately 3,900 to 4,400 feet below the surface) and the Deep Creek Sandstone (approximately 4,200 to 4,700 feet below the surface). The Cherokee and Deep Creek Formations are isolated above and below by competent shale barriers that will prevent the initiation and propagation of fractures through overlying strata to any fresh water zones.

The source of the water to be disposed is from the coals in the Mesaverde Group. Coalbed formation water (CBM produced water) will be collected in a buried two-inch polyethylene flowline (pipeline) for transport to the water disposal facility location approved by the WOGCC and the BLM.

A typical water disposal facility consists of four 400 bbl water tanks, pump house, piping, and well house (see attached schematic of Typical Water Disposal Facility). Four transfer pumping stations, consisting of a 400 bbl water tank with associated pump and piping, will be needed (see attached Typical Water Transfer Facility). These transfer stations will be located near proposed disturbance areas, outside cultural sites, and, where possible, away from any known sensitive wildlife or resource areas. Final location of the water transfer facilities will be submitted in a Sundry Notice. CBM-produced water and gas gathering lines will be co-located with well access roads as much as possible to reduce potential surface disturbance.

The water tanks will be constructed, maintained, and operated to prevent unauthorized surface or subsurface discharges of water. The tanks will be located away from the established drainage patterns in the area and be constructed to prevent the entrance of surface water.

The water tanks will be fenced or capped to prevent livestock or wildlife entry.

The water tanks will be kept reasonably free from surface accumulations of liquid hydrocarbons and are not to be used for disposal of water from other sources without the prior approval of the BLM. Any discharge from the tanks will be reported to the BLM as required by NTL-3A.

All storage tanks and compressor facilities, designed to contain oil, glycol, produced water, or other fluid which may constitute a hazard to public health or safety, shall be surrounded by a secondary means of containment for the entire contents of the largest single tank in use, plus one foot of freeboard. The containment or diversionary structure shall be impervious to any oil, glycol, produced water, or other toxic fluid for 72 hours and would be constructed so that any discharge from a primary containment system would not drain, infiltrate, or otherwise escape to groundwater, surface water, or navigable waters before cleanup is completed.

Within 90 days of initial production start-up, the operator will submit to the BLM authorized officer an analysis of the produced water.

5. Location and Type of Water Supply for Drilling

Water produced from nearby CBM wells may be transported to the drilling locations and used to drill these wells. Alternately, water for drilling the initial well may be purchased from a private source and transported by truck to the drilling location.

Any changes in the water source or method of transportation must have written approval from BLM's authorized officer before the changes take place.

6. Construction Materials

Construction materials (mineral material aggregate suitable for surfacing material) will be purchased from a nearby private source or a local supplier having a permitted source of materials in the area. No construction materials will be removed from Federal and/or Indian lands without prior approval from the BLM.

7. Methods for Handling Waste Disposal

Drill cuttings (rock fragments generated during drilling) will be produced during the drilling of the borehole. Cuttings will be buried in the reserve pit upon closure of the reserve pit.

No oil or other oil-based drilling additives, chromium/metals-based muds, or saline muds will be used during drilling of these wells. Only freshwater, biodegradable polymer soap, bentonite clay, and non-toxic additives will be used in the mud system. Details regarding the mud program are incorporated within the accompanying Master Drilling Program. These wells will not produce oil or saltwater typical of oil production. Furthermore, other liquid hydrocarbons are not anticipated. Should unexpected liquid petroleum hydrocarbons (e.g., crude oil or condensate) be encountered during drilling or well testing, all liquid petroleum hydrocarbons will be contained in test tanks on the well site.

A portable, self-contained chemical toilet will be provided on location during drilling and completion operations. Upon completion of operations, or as required, the contents of toilet holding tanks will be disposed of at an authorized sewage treatment and disposal facility. Disposal will be in accordance with State of Wyoming, Carbon County, and BLM requirements regarding sewage treatment and disposal. PEDCO will comply with all state and local laws and regulations pertaining to disposal of human and solid wastes.

No trash will be placed in the reserve pit. All refuse (trash and other solid waste including cans, paper, cable, etc.) generated during construction, drilling, and well testing activities will be contained in an enclosed receptacle, removed from the drill locations promptly, and hauled to an authorized disposal site.

Immediately after removal of the drilling rig, all debris and other waste materials not contained within trash barrels will be cleaned up and removed from the well location. No potentially adverse materials or substances will be left on the drill location.

Hazardous Materials Management

All project-related activities involving hazardous materials will be conducted in a manner that minimizes potential environmental impacts. An on-site file will be maintained containing current Material Safety Data Sheets (MSDS) for all chemicals, compounds, and/or substances that are used in the course of construction, drilling, completion, production, and reclamation operations. Open pits that may contain hazardous materials will be netted.

No hazardous substance will be used in the construction or drilling operations associated with these wells. The term “hazardous materials” as used here means: 1) any substance, pollutant, or containment (regardless of quantity) listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended 42 U.S.C. 9601 et seq., and the regulations issued under CERCLA; 2) any hazardous waste as defined in the Resource Conservation and Recovery Act (RCRA) of 1976, as amended; and 3) any nuclear or nuclear byproduct as defined by the Atomic Energy Act of 1954, as amended, 42 U.D.C. 2001 et seq. The operator will be required to provide a referenced list of hazardous materials that could potentially be used, produced, transported, disposed of, or stored on the well location including a discussion on the management of the hazardous materials.

Any spills of oil, gas, or any other potentially hazardous substance will be reported immediately to the BLM, landowner, local authorities, and other responsible parties and will be mitigated immediately, as appropriate, through cleanup or removal to an approved disposal site.

8. Ancillary Facilities

Self-contained travel-type trailers may be used on-site during drilling operations. No facilities other than those described in this MSUP will be constructed to support the operations associated with the wells.

9. Well Site Layout

Schematic drawings of the Well Site Layout for each well are attached to this MSUP. Each schematic shows the orientation of the drill pad with respect to the topographic features (i.e., cut and fill), facilities, and access to the pad. Location Survey Plats and Drill Pad Cross Sections are also attached to this MSUP.

At each drill location, surface disturbance will be kept to a minimum. The areal extent of each drill pad is approximately 200 feet by 200 feet. Each drill pad will be leveled using cut and fill construction techniques where needed. Prior to constructing the drill pad the top 6-8 inches (more if available) of soil and associated vegetative material will be removed and stockpiled. Drainage ditches will be constructed to divert stormwater away from each pad. All surface disturbance related to drilling will be confined to each drill site.

PEDCO plans to use a reserve pit at each drilling location. A reserve pit is used during drilling to circulate the drilling mud (mostly bentonite clay and freshwater) and rock cuttings out of the borehole and for holding drilling fluids. This pit will be designed and constructed according to WOGCC regulations and BLM requirements.

Each reserve pit will be approximately twenty feet deep (including two feet of freeboard), and will be forty feet wide and forty feet long (at the surface). Each pit will be excavated within the “cut area” of the drill site to minimize any potential for slope failure (geotechnical hazard). Each pit will be closely monitored to ensure no pit overflows occur. The reserve pit will be open for an estimated two to eight weeks to allow for evaporation of pit fluids. During this time the pit will be closed off from wildlife and livestock by two strands of barbed wire above a woven wire fence. The reserve pit will be backfilled when dry with a minimum cover of 4 feet of soil material.

Each reserve pit shall be constructed in a manner which minimizes the accumulation of surface precipitation runoff into the pit. This can be accomplished by appropriate placement of subsoil/topsoil storage areas and/or construction of berms or ditches.

For the protection of livestock and wildlife, all pits and open cellars shall be fenced. Fencing shall be in accordance with BLM specifications. Netting will be placed over any pits that have been identified as containing oil or hazardous substances (CERCLA Section 101(14)) as determined by visual observation or testing. The mesh diameter shall be no larger than one inch.

10. Plans for Reclamation of the Surface

As soon as practical after the conclusion of drilling and testing operations, unproductive drill holes will be plugged and abandoned and site restoration will commence. The BLM will be notified prior to commencing reclamation operations. A Notice of Intent to Abandon will be filed for final recommendations regarding surface reclamation.

Upon completion of drilling, the reserve pit will be dewatered and reclaimed in accordance with BLM guidance. Typically this procedure involves allowing the contents to dry naturally, and then backfilling, re-contouring and reclaiming the reserve pit area to approximate pre-drilling site conditions. After abandonment of productive wells, all wellhead equipment that is no longer needed will be removed and the well sites will be restored.

Any areas, including the drilling locations, reserve pits or access routes, that are disturbed by earthwork will be recontoured to a natural appearance as near to the original contour as possible as soon as practical after the conclusion of operations. Recontoured areas will be outsloped and waterbreaks will be constructed where needed, to avoid concentrating surface waters and producing gullies.

Any flowline trenches that may be constructed will be backfilled completely. The land surface will be left "rough" after recontouring to ensure that the maximum surface area will be available to support the reestablishment of vegetative cover.

All topsoil conserved during earthwork will be distributed evenly and left "rough" over these recontoured areas. BLM goals for vegetative cover will guide revegetation efforts. Common goals are erosion control, palatable and nutritious forage for livestock and wildlife, and visual aesthetics.

Revegetation efforts will comply with BLM specifications on all BLM surface ownership lands. If no specifications are provided, the following specifications will be used. Seeding is expected to occur in the fall after September, prior to ground frost, or in the spring after frost has left the ground. The seed mixture, including fertilizer and mulching requirements, seeding depth, and seed drilling specifications will be developed in consultation with the BLM. Seed will be drilled on the contour using a seed drill equipped with a depth regulator in order to ensure even depths of planting. Seed will be planted between one-quarter to one-half inch deep. The anticipated seed mix and rates of application to be applied are listed below. Soil material that will be stockpiled for ten months or longer will be seeded according to BLM specifications, to the extent practicable.

Species of seed	Variety Lbs.* PLS**
Grasses	
Slender wheatgrass (*Agropyron techycaulum*)	2
Thickspike wheatgrass (*Agropyron dasystachyum*) (*Critana*)	4
Western wheatgrass (*Agropyron smithii*)	2
Indian ricegrass (*Oryzopsis hymenoides*)	2
Sandberg bluegrass (*Poa sandbergii*)	0.5
Bottlebrush squirreltail (*Sitanion hystrix*)	1
Shrubs	
Gardner's saltbush (*Atriplex gardnerii*)	1
Total	12.5

* These seed rates are for drill seeding. If broadcast seeding, double the rates provided.
** Pure Live Seed

11. Surface Ownership

U.S. Bureau of Land Management
Rawlins Field Office
1300 North Third
Rawlins, Wyoming 82301-2407
(307) 328-4200

12. Other Information

PEDCO is the lessee or operator for the federal CBM leases associated with this MSUP and these APDs.

The operator will have a qualified individual to serve as a compliance coordinator. This individual will be responsible for assuring that all requirements of the Surface Use Plan and appropriate Conditions of Approval are followed.

No slopes in excess of 25 percent would be affected by this proposal. No activities are planned near existing highways, railroads, pipelines, or powerlines. There are no occupied buildings or residences within one-quarter mile of the proposed drill sites.

Any road crossings of dry drainages, riparian, or other wetland areas will utilize appropriate Best Management Practices (BMP) to minimize impacts to these areas.

The Water Management Plan for this POD is enclosed with this MSUP.

The operator will be responsible for the prevention and suppression of fires on public lands caused by its employees, contractors, or subcontractors. During conditions of extreme fire danger, surface use operations may be either limited or suspended in specific areas, or additional measures may be required by the Authorized Officer.

The presence, distribution, and density of noxious weeds in the project area will be controlled on disturbed areas within the exterior limits of the access road ROW and well pads. The well access roads and well pads will be inspected regularly to ensure that noxious weeds do not become established in newly disturbed areas. The control methods will be in accordance with guidelines established by the EPA, BLM, and state/local agencies.

The project area encompasses public lands that consist of undulating grassland and sagebrush uplands, terraces, and riparian areas along and above creeks. The existing stream channels are intermittent or ephemeral and are partially vegetated with grasses. The nearest live water is located in Cow Creek.

Local flora consists primarily of needlegrass, western wheatgrass, prairie junegrass, blue grama grass, Indian rice grass, prickly pear cactus, and salt sage. Local fauna consists primarily of mule deer, antelope, coyotes, rabbits, raptors, and various smaller vertebrate and invertebrate species. Livestock graze on some of these lands. Oil and gas production activities have occurred in the general area.

Soils have good reclamation potential provided the hydrologic hazard of water erosion is mitigated through the use of adequate water breaks and drainage structures in recontoured areas. Rooting depths are adequate to ensure the reestablishment of vegetation at the conclusion of project activities.

A cultural/historical resource inventory has been conducted by a qualified archaeologist permitted in Wyoming by the BLM A block survey for cultural resources was required by the BLM for this pod. The findings have been submitted under separate cover. Any additional areas of potential effect identified subsequent to the completion of the report will be inventoried as specified by the BLM, and a supplemental report will be prepared.

Landowner Notification

Landowners will be contacted prior to any activities being conducted on privately owned lands.

13. Site-specific Conditions of Approval

a. Wildlife Stipulations

1) All Wells **Except**: 9-8, 5-9, 11-9, 13-9, 15-9, 8I, 9I

Construction, drilling and other activities potentially disruptive to wintering wildlife are prohibited during the period of November 15 to April 30 for the protection of big game winter habitat.

2) All Wells **Except:** 15-8

Construction, drilling and other activities potentially disruptive to nesting raptors are prohibited during the period of February 1 to July 31 for the protection of raptor nesting areas.

3) All Wells **Except:** 5-5, 7-5, 9-5, 11-5, 13-5, 15-5, 3-8, 5-8, 8I

Construction, drilling and other activities potentially disruptive to strutting and nesting sage/sharp-tailed grouse are prohibited during the period of March 1 to June 30 for the protection of sage/sharp-tailed grouse nesting areas.

4) Wells: 1-5, 7-5, 9-5, 5-9, 15-9

Potential mountain plover habitat exists at the proposed project location. Additional protection measures may be applied if this area is later determined to be part of a mountain plover concentration area.

Ground-disturbing activities including construction, drilling and reclamation activities are prohibited during the mountain plover reproductive period of April 10 to July 10, unless surveys consistent with the Plover Guidelines or other USFWS approved method find that no plovers are nesting in the area.

b. Road and Well Pad Minimum Requirements

ARFederal 1591-1-5:	Two 18” culverts required in access road.
ARFederal 1591-3-5:	Low water crossing required.
ARFederal 1591-5-5:	One 18” culvert and one low water crossing required in access road.
ARFederal 1591-7-5:	One 18” culvert required in access road. Wing ditches to be constructed on access road leading down the hill.
ARFederal 1591-9-5:	Four 18” culverts required to be installed in access road leading to well location.
ARFederal 1591-11-5:	One 18” culvert required to be installed in access road. Where water and gas lines cross drainage to the south, the banks of the drainage need to be sloped.
ARFederal 1591-13-5:	One 18” culvert required in access road. Use existing two-track for access and locate water, gas and electrical lines on the south side of two-track road.
ARFederal 1591-15-5:	Three 18” culverts required in access road.
ARFederal 1591-1-8:	One 24” culvert required in access road. Access should come onto the pad from the north. Bring access road north around the knob.
ARFederal 1591-3-8:	One 24” culvert and one 18” culvert required in access road.

ARFederal 1591-5-8:	Two 18” culverts required in access road. One gate or cattleguard to be installed through the fence.
ARFederal 1591-7-8:	One 18” culvert required in access road. Access should come onto the pad from the west side.
ARFederal 1591-9-8	Bring access up small draw off of the County Road from the northeast of location, far enough below crest of hill to avoid sight distance problems.
ARFederal 1591-15-8:	The access should follow along the west side of the ridge. Topsoil should be placed on the south side of pad. Culverts, drainage dips, and waterbars will be installed as necessary to divert upland drainage across road and to minimize erosion alongside the road. The water line should run back along access road to the 8I instead of 9I if possible to avoid going through large drainage to the east.
ARFederal 1591-3-9:	Two 18” culverts required in access road. Install gate or cattleguard through the fence.
ARFederal 1591-5-9:	One 36” culvert required in access road. Construct wing ditches.
ARFederal 1591-13-9:	Access should come onto the pad from the south, and bring access route up to crest of hill for sight distance and to avoid need for a culvert.
ARFederal 1591-15-9:	One 18” culvert required in access road.
ARState 1591-5-16:	Access should come onto the pad from the south on top of the ridge.
ARState 1591-7-16:	Move topsoil to southeast corner of pad.
ARState 1591-11-16:	Access should come onto the pad from the northeast. One 18” and one 24" culvert will be required.

c. Cultural Resources

For all Wells:

A BLM-permitted archaeologist will monitor construction of all well pads, access roads, compressor stations, water transfer facilities, or other surface-disturbing activities.

A BLM-permitted archaeologist will conduct an open trench inspection of all gas, water, and electrical lines.

d. Other

Prior to disposal of CBM-produced water, the U.S. Fish and Wildlife Service must concur that there will be not water depletion of the Colorado River System.

14. Lessee's Representative and Certifications

Representatives for Petroleum Development Corporation

Name and Title:	Mr. Scott Hedlund, Compliance Technician
Address:	801 East 4th Street, Suite 23
City/State/Zip:	Gillette, Wyoming 82716
Phone:	(307) 682-4088

Bonding

Blanket Bond No. RL80001697; BLM Bond No. WY3280; $25,000 Surety

Certification

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill sites and access routes; that I am familiar with the conditions which currently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by PEDCO and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C 1001 for the filing of a false statement.

I also certify that PEDCO will comply with the provisions of the law or the regulations governing the Federal or Indian right of reentry to the surface under 43 CFR 3814.

I also certify that PEDCO shall use its best efforts to conduct its approved operations in a manner that avoids adverse effects on any properties which are listed, or may be eligible for listing, in the National Register of Historic Places (NRHP). If historic or archaeological materials are uncovered during construction, the operator will immediately stop work that might further disturb such materials, and contact the authorized officer (or his/her representative) at the BLM Rawlins Field Office. Any paleontological resources or fossils discovered as a result of operations associated with these wells will be brought to the attention of the authorized officer or his/her representative immediately. All activities in the vicinity of such discoveries will be suspended until notified to proceed by the authorized officer.

PEDCO has applied for Permits to Appropriate Groundwater from the Wyoming State Engineers Office, concurrently with these APDs.

Name: Scott Hedlund

Title: Compliance Technician, Petroleum Development Corporation

Signature: _____ Date:_____

Table 1
Blue Sky CBM Project Well Information

No	Well Name, Number, and Legal Description						Lease Information	Surface Ownership Information	Flow Measurement	Location Off Lease Measurement
	Name	Number	Qtr/Qtr	Sec	Twn	Rng	Lease No.	Name & Address		
1	ARFederal	1591-1-5	NENE	5	15N	91W	WYW141276	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	
2	ARFederal	1591-3-5	NENW	5	15N	91W	WYW141277	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	Yes
3	ARFederal	151-5-5	SWNW	5	15N	91W	WYW141277	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	Yes
4	ARFederal	1591-7-5	SWNE	5	15N	91W	WYW141276	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	
5	ARFederal	1591-9-5	NESE	5	15N	91W	WYW141276	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	
6	ARFederal	1591-11-5	NESW	5	15N	91W	WYW141276	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	
7	ARFederal	1591-13-5	SWSW	5	15N	91W	WYW141276	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	
8	ARFederal	1591-15-5	SWSE	5	15N	91W	WYW141276	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	
9	ARFederal	1591-1-8	NENE	8	15N	91W	WYW141277	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	Yes
10	ARFederal	1591-3-8	NENW	8	15N	91W	WYW141276	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	
11	ARFederal	1591-5-8	SWNW	8	15N	91W	WYW141276	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	
12	ARFederal	1591-7-8	SWNE	8	15N	91W	WYW141277	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	Yes

Table 1 (continued)
Blue Sky CBM Project Well Information

No	Well Name, Number, and Legal Description						Lease Information	Surface Ownership Information	Flow Measurement	Location Off Lease Measurement
	Name	Number	Qtr/Qtr	Sec	Twn	Rng	Lease No.	Name & Address		
13	ARFederal	1591-9-8	NESE	8	15N	91W	WYW141276	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	
14	ARFederal	1591-15-8	SWSE	8	15N	91W	WYW141276	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	
15	ARFederal	1591-3-9	NENW	9	15N	91W	WYW148481	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	Yes
16	ARFederal	1591-5-9	SWNW	9	15N	91W	WYW148481	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	Yes
17	ARFederal	1591-11-9	NESW	9	15N	91W	WYW141277	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	Yes
18	ARFederal	1591-13-9	SWSW	9	15N	91W	WYW148481	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	Yes
19	ARState	1591-15-9	SWSE	9	15N	91W	WYW141277	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	Yes
20	ARState	1591-3-16	NENW	16	15N	91W	94-00401	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	Yes
21	ARState	1591-5-16	SWNW	16	15N	91W	94-00401	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	Yes
22	ARState	1591-7-16	SWNE	16	15N	91W	94-00401	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	Yes
23	ARState	1591-11-16	NESW	16	15N	91W	94-00401	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	Yes
24	S&W State	1591-1-16	NENE	16	15N	91W	94-00401	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	Yes
25	Cow Creek	Comp. Station	SENW	8	15N	91W	WYW141276	BLM - 1300 North Third, Rawlins WY 82301	Cow Creek Compressor Station	

Table 2
Permitted Water Wells Within One Mile of the Blue Sky Project Area

Permit No.	Twn	Rng	Sec	Qtr/Qtr	Applicant	Facility Name	Use	YldAct	Well Depth	Stat Depth
P6142P	15	91	15	NWSW	BLM	Wild Cow Well #1	STO	20	Unkwn	Unkwn

APPENDIX E

MASTER DRILLING PLAN

MASTER DRILLING PROGRAM

OPERATOR: Petroleum Development Corporation (Pedco)
Carbon County, Wyoming
Sections 5, 8 and 9, T.15N., R.91W., 6th PM
BLM Leases: WYW141276, WYW141277, WYW148481

Drilling Program is for the subject wells listed below.

WYW 141276	WYW 141277	WYW 148481
ARFederal 1591-1-5	ARFederal 1591-3-5	ARFederal 1591-3-9
ARFederal 1591-7-5	ARFederal 1591-5-5	ARFederal 1591-5-9
ARFederal 1591-9-5	ARFederal 1591-1-8	ARFederal 1591-13-9
ARFederal 1591-11-5	ARFederal 1591-7-8	
ARFederal 1591-13-5	ARFederal 1591-11-9	
ARFederal 1591-15-5	ARFederal 1591-15-9	
ARFederal 1591-3-8		
ARFederal 1591-5-8		
ARFederal 1591-9-8		
ARFederal 1591-15-8		

1. AVERAGE ESTIMATED TOPS OF IMPORTANT GEOLOGIC MARKERS

Formation	Depth (2,455)	Depth (3,600)
Lewis Shale	Surface	Surface
Almond	1,325’	2,480’
Pine Ridge	1,785’	2,940’
Allen Ridge	1,905’	3,060’
TD	2,455’	3,600’

****** these depths would be the shallowest and deepest

Table 1
Blue Sky POD CBM Project Well Information

Well Information							Lease Information				Cementing Program			
No.	**Name**	**Number**	**Qtr/Qtr**	**Sec**	**Tns**	**Rng**	**Lease No.**	**Elevation**	**Formation**	**Depth**	**Casing**	**Hole**	**Depth**	**Cement (sx)**
1	ARFederal	1591-1-5	NENE	5	15N	91W	WYW141276	6,520' GL	Lewis	0'	**Surface**	13 ½"	246	124
									Almond	1,330'	**Production**	9 7/8"	2,460	610
									Pine Ridge	1,790'				
									Allen Ridge	1,910'				
									Total Depth	2,460'				
2	ARFederal	1591-3-5	NENW	5	15N	91W	WYW141277	6,504' GL	Lewis	0'	**Surface**	13 ½"	284	143
									Almond	1,710'	**Production**	9 7/8"	2,840	704
									Pine Ridge	2,170'				
									Allen Ridge	2,290'				
									Total Depth	2,840'				
3	ARFederal	1591-5-5	SWNW	5	15N	91W	WYW141277	6,491' GL	Lewis	0'	**Surface**	13 ½"	312	158
									Almond	1,990'	**Production**	9 7/8"	3,120	774
									Pine Ridge	2,450'				
									Allen Ridge	2,570'				
									Total Depth	3,120'				
4	ARFederal	1591-7-5	SWNE	5	15N	91W	WYW141276	6,510' GL	Lewis	0'	**Surface**	13 ½"	274	138
									Almond	1,610'	**Production**	9 7/8"	2,740	680
									Pine Ridge	2,070'				
									Allen Ridge	2,190'				
									Total Depth	2,740'				
5	ARFederal	1591-9-5	NESE	5	15N	91W	WYW141276	6,497' GL	Lewis	0'	**Surface**	13 ½"	263	133
									Almond	1,500'	**Production**	9 7/8"	2,630	652
									Pine Ridge	1,960'				
									Allen Ridge	2,080'				
									Total Depth	2,630'				
6	ARFederal	1591-11-5	NESW	5	15N	91W	WYW141276	6,484' GL	Lewis	0'	**Surface**	13 ½"	300	152
									Almond	1,840'	**Production**	9 7/8"	3,000	744
									Pine Ridge	2,300'				
									Allen Ridge	2,420'				
									Total Depth	2,970'				

Table 1 (continued)
Blue Sky POD CBM Project Well Information

Well Information							Lease Information				Cementing Program			
No.	**Name**	**Number**	**Qtr/Qtr**	**Sec**	**Tns**	**Rng**	**Lease No.**	**Elevation**	**Formation**	**Depth**	**Casing**	**Hole**	**Depth**	**Cement (sx)**
7	ARFederal	1591-13-5	SWSW	5	15N	91W	WYW141276	6,481' GL	Lewis	0'	**Surface**	13 ½"	340	172
									Almond	2,090'	**Production**	9 7/8"	3,400	843
									Pine Ridge	2,550'				
									Allen Ridge	2,670'				
									Total Depth	3,220'				
8	ARFederal	1591-15-5	SWSE	5	15N	91W	WYW141276	6,489' GL	Lewis	0'	**Surface**	13 ½"	290	146
									Almond	1,740'	**Production**	9 7/8"	2,900	719
									Pine Ridge	2,200'				
									Allen Ridge	2,320'				
									Total Depth	2,870'				
9	ARFederal	1591-1-8	NENE	8	15N	91W	WYW141277	6,500' GL	Lewis	0'	**Surface**	13 ½"	289	146
									Almond	1,760'	**Production**	9 7/8"	2,890	717
									Pine Ridge	2,220'				
									Allen Ridge	2,340'				
									Total Depth	2,890'				
10	ARFederal	1591-3-8	NENW	8	15N	91W	WYW141276	6,480' GL	Lewis	0'	**Surface**	13 ½"	329	166
									Almond	2,160'	**Production**	9 7/8"	3,290	816
									Pine Ridge	2,620'				
									Allen Ridge	2,740'				
									Total Depth	3,290'				
11	ARFederal	1591-5-8	SWNW	8	15N	91W	WYW141276	6,476' GL	Lewis	0'	**Surface**	13 ½"	360	182
									Almond	2,480'	**Production**	9 7/8"	3,600	893
									Pine Ridge	2,940'				
									Allen Ridge	3,060'				
									Total Depth	3,610'				
12	ARFederal	1591-7-8	SWNE	8	15N	91W	WYW141277	6,500' GL	Lewis	0'	**Surface**	13 ½"	314	159
									Almond	2,010'	**Production**	9 7/8"	3,140	779
									Pine Ridge	2,470'				
									Allen Ridge	2,590'				
									Total Depth	3,140'				

Table 1 (continued)
Blue Sky POD CBM Project Well Information

Well Information							Lease Information				Cementing Program			
No.	**Name**	**Number**	**Qtr/Qtr**	**Sec**	**Tns**	**Rng**	**Lease No.**	**Elevation**	**Formation**	**Depth**	**Casing**	**Hole**	**Depth**	**Cement (sx)**
13	ARFederal	1591-9-8	NESE	8	15N	91W	WYW141276	6,565' GL	Lewis	0'	**Surface**	13 ½"	319	161
									Almond	2,060'	**Production**	9 7/8"	3,190	791
									Pine Ridge	2,520'				
									Allen Ridge	2,640'				
									Total Depth	3,190'				
14	ARFederal	1591-15-8	SWSE	8	15N	91W	WYW141276	6,607' GL	Lewis	0'	**Surface**	13 ½"	353	178
									Almond	2,400'	**Production**	9 7/8"	3,530	876
									Pine Ridge	2,860'				
									Allen Ridge	2,980'				
									Total Depth	3,530'				
15	ARFederal	1591-3-9	NENW	9	15N	91W	WYW148481	6,572' GL	Lewis	0'	**Surface**	13 ½"	246	124
									Almond	1,330'	**Production**	9 7/8"	2,460	610
									Pine Ridge	1,790'				
									Allen Ridge	1,910'				
									Total Depth	2,460'				
16	ARFederal	1591-5-9	SWNW	9	15N	91W	WYW148481	6,539' GL	Lewis	0'	**Surface**	13 ½"	268	135
									Almond	1,550'	**Production**	9 7/8"	2,680	665
									Pine Ridge	2,010'				
									Allen Ridge	2,130'				
									Total Depth	2,680'				
17	ARFederal	1591-11-9	NESW	9	15N	91W	WYW141277	6,572' GL	Lewis	0'	**Surface**	13 ½"	251	127
									Almond	1,380'	**Production**	9 7/8"	2,510	623
									Pine Ridge	1,840'				
									Allen Ridge	1,960'				
									Total Depth	2,510'				
18	ARFederal	1591-13-9	SWSW	9	15N	91W	WYW148481	6,571' GL	Lewis	0'	**Surface**	13 ½"	290	146
									Almond	1,775'	**Production**	9 7/8"	2,905	721
									Pine Ridge	2,235'				
									Allen Ridge	2,355'				
									Total Depth	2,905'				

Table 1 (continued)
Blue Sky POD CBM Project Well Information

Well Information							Lease Information				Cementing Program			
No.	**Name**	**Number**	**Qtr/Qtr**	**Sec**	**Tns**	**Rng**	**Lease No.**	**Elevation**	**Formation**	**Depth**	**Casing**	**Hole**	**Depth**	**Cement (sx)**
19	ARFederal	1591-15-9	SWSE	9	15N	91W	WYW141277	6,627' GL	Lewis	0'	**Surface**	13 ½"	245	124
									Almond	1,325'	**Production**	9 7/8"	2,455	609
									Pine Ridge	1,785'				
									Allen Ridge	1,905'				
									Total Depth	2,455'				

2. ESTIMATED DEPTH OF ANTICIPATED WATER, OIL, GAS OR MINERAL FORMATIONS

Allen Ridge	Methane gas
Almond	Methane gas

The Lewis Shale is not anticipated to contain any zones capable of producing water. There are several zones within the Mesa Verde capable of producing fresh water, including the coal seams. Several coal seams may be tested for gas producing formations to total depth. All shallow water zones will be protected with casing and cement. Cement will be brought to surface to isolate all Mesa Verde formations.

Planned Objective: Mesa Verde

3. MINIMUM BOP REQUIREMENTS (refer to attached BOP schematics)

a. The BOPE shall be closed whenever the well is unattended.
b. The BOPE shall be pressure tested when initially installed, whenever any seal subject to pressure testing is broken, after repairs, or every 30 days.
c. Pedco shall notify the Rawlins BLM office 24 hours prior to the BOPE test.

4. SUPPLEMENTARY INFORMATION

The primary objective of this project is to drill, stimulate, and produce coalbed methane gas from the coal seams of the Mesa Verde Group Formations.

Pedco proposes to test the coal formations between 1,910' and 3,090'. Stimulation of the perforated coal seams will be done by hydraulic fracturing. Fresh water, gelled water, and/or foam fracturing techniques will be used.

Please see the attached schematics for Typical CBM Drill Site Layout, Configuration Options, Typical CBM Completed Well, Typical CBM Well Site, and Bottom Flange and Choke Manifold Schematic.

5. CASING PROGRAM

Hole Size	Casing Size	Casing Weight	Grade	Joint	Depth Set	New/Used	Range
13 1/2"	10 ¾"	32.75#	H-40	ST&C	0-245/360	New	3
9 7/8"	7"	23#	MC-50	LT&C	0-TD	New	3

Surface Casing:	**10¾"**	**32.75 ppf.**	**H-40**	**STC**	**Collapse**	**Burst**	**Tension**
				Ratings:	880	1820	205M

A. Burst = 0.052 * MW * TVD(shoe)
= 0.052 * 9.3ppg * 360'
= 174.1psi
Safety Factor = Rating/Burst
= 1820/174.1
= 10.45

B. Collapse = [0.052 * MW * TVD(shoe)] – [Gas Gradient * TVD]
= [0.052 * 9.3ppg * 360'] – [0.1psi/ft * 360']
= 138.1psi
Safety Factor = Rating/Collapse
= 880/138.1
= 6.37

C. Tension = Weight * D * [1 – (MW/65.5ppg)]
= 32.75ppf * 360' * [1 – (9.3ppg/65.5ppg)]
= 10139.4 lbs.
Safety Factor = Rating/Tension
= 205,000/10139.4
= 20.22

Surface casing shall have centralizers on the bottom 3 joints of the casing, starting with the shoe joint.

Production Casing:	7"	23 ppf.	MC-50	STC	Collapse	Burst	Tension
				Ratings:	3110	3960	273M

A. Burst = 0.052 * 13ppg * 3600'
= 2433.6psi
Safety Factor = Rating/Burst
= 3960/2433.6
= 1.63

B. Collapse = [0.052 * 13ppg * 3600'] – [0.1psi/ft * 3600']
= 2073.6psi
Safety Factor = Rating/Collapse
= 3110/2073.6
= 1.5

C. Tension weight = 23lbs./ft * 3600' * [1 – (13ppg/65.5ppg)]
= 23lbs./ft * 3600' * .8015
= 66364.20 lbs.
Safety Factor = Rating/Tension
= 273,000/66364.20
= 4.11

6. MUD PROGRAM

Drilling mud will be used as the circulation medium. A fresh water, polymer, gel drilling mud will be used and visual monitoring will be done from spud to total depth. The anticipated mud weight will be between 8.5 – 13 ppg. Sufficient quantities of lost circulation material and barite will be available at the well site at all times for the purpose of assuring well control.

7. CEMENTING PROGRAM

The following is the proposed procedure for cementing the 10 ¾" surface pipe and 7" long string:

a. Surface Casing

Lead: Class "C" Type III, 14.4 ppg., yield 1.44ft3/sk @ 101% excess. Compressive strength in 24 hours at 80°F 3100psi.

The surface casing shall be cemented back to surface. In the event cement does not circulate to surface or fall back of the cement column occurs, remedial cementing shall be done to cement the casing back to surface.

b. Long String

Lead: Class "C" Type III, 14.4 ppg., yield 1.44ft^3/sk @ 35% excess. Compressive strength in 24 hours at 95°F 3200psi.

Estimated top of cement back to surface.

8. LOGGING PROGRAM

Cores: Rotary Cores will be taken as needed to evaluate the coal seams.

DSTs: None Planned

Logs: Induction, GR, SP, Density, Neutron and Caliper – From surface to TD
Cement Bond Log – From 10 ¾"casing shoe TD
Mud Logger – As Needed.

9. PRESSURE DATA, POTENTIAL HAZARDS

Bottom hole pressures anticipated @ 1000 – 1100 psi.
There is no history of hydrogen sulfide gas in the area and none is anticipated.

10. ANTICIPATED STARTING DATES AND NOTIFICATION OF OPERATIONS

a. Anticipated Starting Dates

Anticipated Commencement Date	- Spring 2002, or upon approval
Drilling Days	- Approximately 7 Days/Per Well
Completion Days	- Approximately 2 Days/Per Well
Testing Days	- Approximately 7-14 Days/Per Well

Note: Drilling operations will commence as soon as practical after approval of all necessary permits including the APDs.

b. Notification of Operations

Rawlins Field Office, BLM
1300 North Third
Rawlins, Wyoming 82301
(307) 328-4200 (Office Hours)

CONDITIONS OF APPROVAL FOR APPLICATION FOR PERMIT TO DRILL INJECTION WELL

Lease Number: Blue Sky Pod **Date:** January 22, 2002

Operator: Petroleum Developement

Well/Project Name: Master Drilling Plan (Injection Wells)

Legal Description: Sections 5, 8 and 9; T.15N., R.91W.; 6th PM

DRILLING PLAN

BOP

1. All BOPE shall meet minimum standards for well control requirements as set forth in Onshore Order No. 2.

2. The BOPE approved for this Pod shall be tested to a minimum of 1000 psi.

3. A Sundry Notice (Form 3160-5), along with a copy of the BOP test report, shall be submitted to this office within five working days following the test.

4. If the bleed line is connected into the buffer tank (header), all BOP equipment including the buffer tank and associated valves will be rated at the required BOP pressure.

Casing and Cementing

1. The surface casing shall be cemented back to surface. In the event cement does not circulate to surface or fall back of the cement column occurs, remedial cementing shall be done to cement the casing back to surface.

2. Pea gravel or other similar materials shall not be used to fill up around the surface casing in the event cement falls back.

3. A Sundry Notice (Form 3160-5), along with a copy of the service company's materials ticket and job log, shall be submitted to this office within five working days following the running and cementing of all casing strings.

4. All casing strings shall be tested, prior to drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the internal yield pressure of the casing.

5. Any change in the casing and cement design will be approved by the Authorized Officer prior to running casing and cementing.

6. No freshly hard-banded pipe/collars will be rotated in the surface casing.

7. All surface casing will be blocked and centered prior to cut off and installation of the wellhead.

Mud Programs

1. Sufficient quantities of mud materials shall be maintained at the well site, at all times, for the purpose of assuring well control.

Other

1. A summary of the drilling operation and/or completion operation shall be submitted on Sundry Notice (Form 3160-5), to this office, along with copies of the daily drilling reports and/or daily completion reports, on a weekly basis.

2. Any temporary or permanent plugs placed in the well must have **prior** approval of the Authorized Officer.

3. A copy of all logs, formation test reports, stimulation reports, etc., shall be promptly submitted to this office.

4. Gas produced from this well may not be vented or flared beyond an initial test period, 30 days or 50 MMcf, whichever first occurs, without approval of the Authorized Officer. Should gas be vented or flared without approval beyond the test period authorized above, you may be directed to shut-in the well until the gas can be captured or approval to continue the venting or flaring as uneconomic is granted, and you shall be required to compensate the lessor for that portion of the gas vented or flared without approval which is determined to have been avoidably lost.

CONDITIONS OF APPROVAL FOR APPLICATION FOR PERMIT TO DRILL CBM WELLS

Lease Number: Blue Sky Pod **Date:** January 22, 2002

Operator: Petroleum Developement

Well/Project Name: Master Drilling Plan

Legal Description: Sections 5, 8 and 9; T.15N., R.91W.; 6th PM

DRILLING PLAN

BOP

1. All BOPE shall meet minimum standards for well control requirements as set forth in Onshore Order No. 2.

2. The BOPE approved for this Pod shall be tested to a minimum of 1000 psi.

3. A Sundry Notice (Form 3160-5), along with a copy of the BOP test report, shall be submitted to this office within five working days following the test.

4. If the bleed line is connected into the buffer tank (header), all BOP equipment including the buffer tank and associated valves will be rated at the required BOP pressure.

Casing and Cementing

1. The surface casing shall be cemented back to surface. In the event cement does not circulate to surface or fall back of the cement column occurs, remedial cementing shall be done to cement the casing back to surface.

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4. All casing strings shall be tested, prior to drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the internal yield pressure of the casing.

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6. No freshly hard banded pipe/collars will be rotated in the surface casing.

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Mud Programs

1. Sufficient quantities of mud materials shall be maintained at the well site, at all times, for the purpose of assuring well control.

Other

1. A summary of the drilling operation and/or completion operation shall be submitted on Sundry Notice (Form 3160-5), to this office, along with copies of the daily drilling reports and/or daily completion reports, on a weekly basis.

2. Any temporary or permanent plugs placed in the well must have **prior** approval of the Authorized Officer.

3. A copy of all logs, formation test reports, stimulation reports, etc., shall be promptly submitted to this office.

4. Gas produced from this well may not be vented or flared beyond an initial test period, 30 days or 50 MMcf, whichever first occurs, without approval of the Authorized Officer. Should gas be vented or flared without approval beyond the test period authorized above, you may be directed to shut-in the well until the gas can be captured or approval to continue the venting or flaring as uneconomic is granted, and you shall be required to compensate the lessor for that portion of the gas vented or flared without approval which is determined to have been avoidably lost.

APPENDIX F

ATLANTIC RIM DATA SUBMISSION AND MONITORING REQUIREMENTS - BLUE SKY POD

ATLANTIC RIM DATA SUBMISSION AND MONITORING REQUIREMENTS

GEOLOGIC AND COAL INFORMATION REQUIRED TO BE SUBMITTED BY OPERATORS DURING INTERIM DRILLING ACTIVITIES

The geologic and coal information needs identified below are those that the Reservoir Management Group, in consultation with the United States Geologic Survey, has determined are needed based on their experience with coalbed methane development in the Powder River Basin. The information will be used to define the potential gas resource and provide valuable data for the NEPA assessment including the determination of future development potential.

1. Operators will provide copies of all geologic information obtained to the Rawlins Field Office and the Reservoir Management Group as required under 43 CFR 3162.4.

2. The suite of logs required to evaluate coal beds in the project area are high resolution gamma ray, resistivity, density, and neutron logs. The full suite will be required during this phase but may be reviewed for changes during any later drilling phase.

3. Detailed geologic and coal information will be required and obtained for a minimum of one well within each of the nine pods. Information required includes; coal cores, fluid level, and production an analysis. From this data information can be obtained on coal rank, adsorption and desorption gas content, core density, specific gravity, orientation of cleats and joints, initial saturations, coal permeability, and desorption pressure.

4. Initial reservoir pressure for each pod drilled.

5. Agree to standard stratigraphic nomenclature for all operators to use in preparing reports to the BLM and Wyoming Oil and Gas Conservation Commission.

6. Obtain an initial reservoir pressure for each coal bed in three of the pods.

7. Obtain reservoir pressure at the end of one year and two years, for each coal bed in three of the pods.

WATER ASSESSMENT/MONITORING DATA NEEDS

Recognizing that surface and ground water resources can be affected by large coalbed methane drilling projects, the following data submission requirements will be necessary to complete the assessment of impacts and develop baseline water conditions. Also water monitoring data has been found to be vital when reviewing drainage situations.

1. The operator(s) will obtain aquifer hydraulic baseline data for all pods in the initial exploration phase. This will include hydraulic conductivity and storativity derived from a multiple well pumping test conducted at each pod. This information could be used to provide data for the NEP A document and to assess monitoring needs for full field development.

2. Identify all domestic/industrial wells in the area and make a baseline and annual measurement of each.

3. Prepare a well mitigation agreement for existing wells and offer it to all groundwater appropriators in the vicinity.

4. Monitoring wells need to be installed both in an updip and downdip direction, completed in coal and overburden, from the pods selected. Details of this requirement will be done in coordination with the Rawlins Field Office hydrologist.

5. Measure initial static water levels in all production wells.

6. Collect water quality analyses for each pod.

7. Each well must have a continuous flow meter installed to measure water production rates for the duration of the project. All water production data will be furnished to the Bureau.

8. Baseline surface water quality should be collected in each stream or receiving water that will collect or transport discharge water. The analysis will include all BLM category I, II and III constituents.

9. The operator will provide to BLM a geologic map of the area/watershed where the produced water is to be re-injected. This should include surficial and bedrock geology, with a clear definition of recharge zones of the receiving formation/unit. The pre-injection water levels and water quality should be monitored and that data provided to BLM. The receiving aquifer should be pump tested and aquifer hydraulics reported to BLM. The reported parameters will include hydraulic conductivity, water levels and storativity for each receiving aquifer.

REVISED MONITORING REQUIREMENTS

3181
(3181.1)
Sun Dog (CBM)
WYW152954X

Petroleum Development Corporation
c/o Ken Gobble
801 East 4th St/. Suite 23
Gillette, Wyoming 82716

JAN 14 2002

Dear Mr. Gobble:

Thank you for making your presentation on November 20, 2001 to our staff regarding groundwater monitoring well and coring requirements for the Sun Dog CBM and similar CBM units on the Atlantic Rim area and for the Interim Drilling Policy approved by the Rawlins Field Office. We reviewed your proposal of December 7, 2001 in response to our meeting regarding groundwater-monitoring wells. We agree that there are four distinct groups of coalbeds in the Mesaverde Formation in the Atlantic Rims area and that there are three distinct geologic settings for this area. We have added additional information to your description of these three areas as follows:

1. The Mesaverde coalbeds in this area crop out on Atlantic Rim between the middle of T. 18 N., R. 89-90 W.; T. 19 N., R. 88-89 W.; and T. 20 N., R. 88 W. Dips are as much as 16 degrees west in this area. Tract-delineation information for the Atlantic Rim Coal Area prepared for the 1984 coal lease sale, indicates that the rocks in T. 18 N., R. 89-90 W. dip from 8 to 12 degrees northwest, with an average dip of 10 degrees. The reports indicate that the gentlest dips are found along the north and south margins and increase in the middle along a major fault. A significant east-west trending normal fault may be considered the southern boundary of this area (Geologic Map of Wyoming, 1985 and PeDCo's regional structure map submitted with the Sun Dog, et. al. CBM units). The net coal thickness is less in this area than to the south. Average annual precipitation in the area is between 7 and 9 inches (USDA, SCS, Map M7-EN-22902) but owing to the orographic effect along Atlantic Rim may be closer to 10 inches. Based on the steep dips, small surface exposure, and low precipitation, recharge rates will be low.

2. The Mesaverde coalbeds in this area crop out on Atlantic Rim between the middle of T. 18 N., R. 89-90 W.; T. 17 N., R. 90 W.; T. 16 N., R. 89-92 W.; and T. 15 N., R. 89-92 W. Dips are mostly 2 to 4 degrees west in this area but locally dips are interrupted by small domes and anticlines. The crop area of these rocks is 8 to 10 miles wide (Geologic Map of Wyoming, 1985 and PeDCo's regional structure map

submitted with the Sun Dog, et. al. CBM units). Average annual precipitation in the area is between 10 and 14 inches (USDA, SCS, Map M7-EN-22902) but owing to the orographic effect along Atlantic Rim may be closer to the higher value of 14 inches. Based on the areal extent of the surface exposure and higher precipitation, recharge rates will be higher.

3. The Mesaverde coalbeds in this area crop out on Atlantic Rim between T. 14 N., R. 88-90 W. and T. 13 N., R. 87-89 W. Dips are 2 to 4 degrees west in this area. The crop area of these rocks is 12 to 15 miles wide (Geologic Map of Wyoming, 1985 and PeDCo's regional structure map submitted with the Sun Dog, et. al. CBM units); locally the Mesaverde Formation is overlain unconformably with high permeability Tertiary Miocene rocks (North Park Formation?). Average annual precipitation in the area is as much as 20 inches (USDA, SCS, Map M7-EN-22902). Based on the areal extent of the surface exposure, potential contact with higher permeability rocks, and higher precipitation, recharge rates will be even higher than in the first two areas..

We are in agreement with items I - VII in your letter. However, only items I, II, III, and V and new items VIII and IX should be made part of the INTERIM DRILLING POLICY (ATTACHMENT 1) as amended:

1. Item I shall be amended as follows "One pod in each distinct geologic setting will be selected for monitoring reservoir pressures with the required monitoring well program. The location of wells used in monitoring reservoir pressures will be determine through discussion with, and approval by, the Reservoir Management Group and the Rawlins Field Office".

2. Item II stands as written

3. Item III. shall also include the following statement: "Data collected in each interval of the multiple completion groundwater monitoring well shall include an initial, four-hour, formation-pressure measurement for each perforated interval. Subsequent, periodic pressure measurements for each perforated interval will be of at least a two-hour duration unless the interval has been open for more than two hours or if pressure buildup or decline data suggest a different time interval".

4. Item V. shall also include the following statement: 'The shut-in period shall be 24-hour in duration unless buildup data suggest shorter shut-in periods. The pressures will be recorded using a bottom-hole pressure bomb or by a device of equivalent accuracy".

5. Add Item VIII. as follows: "An initial, properly collected and preserved, water-quality sample shall be obtained from each perforated interval for chemical analysis. The chemical analyses shall include all constituents listed in attachment 1".

6. Add Item IX. as follows: "In the event that the three (3) perforated zones (a sandstone aquifer below the producing coal, the producing coal, and a sandstone aquifer above the producing coal) are not effectively isolated by the multiple completion, we may require additional groundwater monitoring wells".

In addition, items I - VII and new items VIII and IX will be applied to the Sun Dog (CBM) Unit, and/or future units in the Atlantic Rim Area as (ADDITIONAL OBLIGATIONS, 9(c)). Amendments to the Sun Dog (CBM) Unit will be addressed in an amended designation letter.

Please call Roger Miller at 307-261-7630, if you have any questions.

Sincerely,

/S/ KURT J. KOTTER

Kurt Kotter
Rawlins Field Office Manager

Asghar Shariff
Chief, Reservoir Management Group

Attachment -
Analysis constituents for CBM groundwater monitoring wells in Atlantic Rim Area

cc: Petroleum Development Corporation
c/o Bonita L. Limpus Jones
P.O. Box 8309
Roswell, New Mexico 88202-8309

DSD, Lands and Minerals (920)
Manager, RFO

bcc: Mike Brogan, CFO
Joe Meyer, CFO
Brenda Voisika-Neuman, RFO
Clare Miller, RFO