



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

June 26, 2002

Re: Cow Creek 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 Cow Creek 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 February 15, 2002, we released the *Environmental Assessment for the Atlantic Rim Coalbed Methane Project, Cow Creek 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,

Field Manager

Enclosure

**DECISION RECORD AND
FINDING OF NO SIGNIFICANT IMPACT
FOR THE
ATLANTIC RIM COALBED METHANE PROJECT
COW CREEK POD ENVIRONMENTAL ASSESSMENT**

INTRODUCTION

Double Eagle Petroleum and Mining Company (Double Eagle) of Casper, 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 Cow Creek Project Area (CCPA) of the Atlantic Rim Project Area (ARPA) of southcentral Wyoming. The Cow Creek proposal is part of exploration drilling activities under consideration for the acquisition of data necessary to prepare the full-field 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. Prior to the development of any exploration activity, the IDP states that 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 14 exploratory CBM wells, 2 injection wells, access roads, a compressor station, and other related production and water disposal facilities in the project area. Four of these wells were previously analyzed in an environmental assessment (EA) completed by the Rawlins Field Office staff on December 14, 2000, and two existing oil and gas wells were approved for recompletion as CBM wells in 1997 and 1999 respectively. The Proposed Action of this EA consists of drilling, completing, and operating eight new productive CBM wells and related production and water disposal facilities. Initial operations are proposed to begin in spring/summer 2002. The total life of the project (LOP) is estimated at 10 to 15 years.

The CCPA is located in Township 16 North, Ranges 91-92 West, Carbon County, Wyoming. Access to the CCPA is provided by the two-lane paved Wyoming State Highway 789 (SH 789) north from Baggs, Wyoming, for approximately 22 miles to the intersection of Carbon County Road 608. The distance from SH 789 to the CCPA is approximately three miles. The CCPA encompasses approximately 2,050 acres, all of which are federal surface and federal mineral.

ALTERNATIVES CONSIDERED

The *Environmental Assessment (EA) for the Atlantic Rim CBM Project, Cow Creek Pod*, analyzed two alternatives. Under the Proposed Action, eight 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 40-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 15 years.

Under the No Action Alternative, The BLM analyzed the impacts associated with the existing Little Snake River Conservation District (LSRCD) reservoir, two recompleted oil and gas wells, the four recently approved CBM wells, and an existing compressor station. This alternative provides a benchmark, enabling the decision-maker to compare the magnitude of 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, Cow Creek 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 eight CBM wells and associated facilities within the CCPA. 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 Appendices C, D and E.

- Development of 8 CBM wells located on federal lands within the project area with an initial total disturbance of 6.6 acres and a life-of-project disturbance of less than 0.04 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 11.0 acres with a LOP disturbance of 5.52 acres.
- Construction of a new off-channel reservoir with an initial disturbance of 2.6 acres and a LOP disturbance of 2.6 acres.

APPROVAL OF THE PROPOSED ACTION IS CONDITIONAL UPON THE FOLLOWING:

- Implementation of the applicant-committed environmental practices and protection measures 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' 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 formal conferencing with the U.S. Fish and Wildlife Service (USFWS).

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 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 Appendices C, 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 March 25, 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
Wyoming Game and Fish Department
Oregon-California Trails Association
Petroleum Association of Wyoming
United States Fish and Wildlife Service
Forest Service
National Wildlife Federation
Biodiversity Associates
Tom Crull
Inter-Mountain Pipe Company
Harold Kemp
Double Eagle

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.



Field Manager

June 26, 2002
Date

APPENDIX A

**MODIFICATIONS AND CORRECTIONS
TO THE
COW CREEK POD PROJECT
ENVIRONMENTAL ASSESSMENT**

APPENDIX A

**ERRATA
MODIFICATIONS AND CORRECTIONS
TO THE
ATLANTIC RIM CBM PROJECT
COW CREEK POD
ENVIRONMENTAL ASSESSMENT**

2.1.3.1 Well Production Facilities

On page 2-8, add the following wording to paragraph 2, line 5, "Should the BLM elect to assume further responsibility of any CBM wells, consent will be obtained from Double Eagle, providing the requirements of Onshore Order No. 1, part VI, *Water Well Conversion*, are met."

2.1.3.5 Produced Water Discharge

On page 2-13, items 4 and 5 make reference to reservoir sizes in acre-feet. This is incorrect. The size of these reservoirs should read 80 acres and 20 acres respectively.

2.1.9.2.3 Transportation

Change item 2 under this heading to read, "Roads constructed as a part of the Cow Creek Pod project that are not required for routine operation and maintenance of producing wells and ancillary facilities would be permanently blocked, reclaimed, and revegetated."

2.1.9.2.10 Special Status Species

Item 5 under this heading will be changed to read as follows, "In order to minimize impacts to plant species of concern, surveys will be conducted prior to project disturbance."

3.7.2 Big Game

Elk

After the reference to Porter, 1999, line 6, insert the following sentence, "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."

5.1 Public Participation

On page 5-1 of the EA add 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**

APPENDIX B

SUMMARY OF EA COMMENTS AND BLM RESPONSES

The EA was released for a 30-day public review period on February 15, 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 time to review the EA and providing comments.

1. Wyoming Game and Fish Department

- a. *In regard to the Affected Environment section, Porter (1999) found that nearly all elk collared in the winter on Powder Rim moved to the Elkhead Mountains in Colorado during the summer. 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. We have also recorded spring concentrations of deer that appear to move from across the main road between the project area and Highway 789, so increased traffic could have an effect on this probable migration area.*

Based on current information, major mule deer migration routes are not known to pass through the Cow Creek Pod project area (page 3-21 of the EA). However, it is likely that mule deer utilize areas in and surrounding the project area, and crucial winter range for mule deer is identified on the west side of the project. Porter's study indicates that mule deer migration corridors may potentially occur in the area in or surrounding the Cow Creek pod. However, the study is not specific enough to determine exact locations of these corridors, and further studies need to be done to refine these areas.

The most significant increase in traffic would occur during the construction phase of the project. Construction activities will be prohibited (unless an exception is granted) from November 15 through April 15, which will reduce the amount of traffic to the project area and, therefore, minimize impacts to wintering and migrating deer. Maintenance of the site would be allowed during this time, but the EA states that this would be limited to a visit to the well site every other day. This is not expected to increase traffic to levels beyond that which currently exists in the project area.

- c. *The wildlife section states that big game species will not be impacted in the long-term since they will eventually habituate after the drilling stage is completed. While the well sites themselves are not an issue for the big game animals, the activities related to well maintenance activities could disturb big game species.*

Studies referenced in the *Draft Continental Divide/Wamsutter II EIS* (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 in the Cow Creek Pod EA, page 4-14, concludes pronghorn acclimate to increased traffic volumes and machinery as long as the traffic moved in predictable manner. As described on page 2-14 of the EA, 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; increases in vehicle traffic from this activity is anticipated to be limited to one or two vehicles per day.

Page 4-14 of the EA states that mule deer are known to be extremely tolerant of most human activities, except hunting, and quickly adjust to nonthreatening, predictable human actions. During a three-year study of response of pronghorn and mule deer to petroleum development in central Wyoming, it was found that the mule deer did not avoid oil fields nor move significant distances from the well site after the start of drilling activity. Because maintenance activities would be less intrusive than development operations, impacts to mule deer population from maintenance activities are anticipated to be minimal.

Elk are known to avoid disturbances associated with logging and construction, but do become easily conditioned to patterned human activity (page 4-14 of the EA). The analysis concludes that elk may become more accustomed to human activity during the long-term production phase and, with the implementation of mitigation described in Chapter 2 and 4 of the EA, the RMP, and the IDP, impacts to elk from maintenance operations should be minimal.

- d. *The EA should provide a more complete cumulative analysis. The current analysis discusses detailed impacts of the adjoining CBM pod (Sun Dog), but does not include other projects such as fences, roads, pipelines, etc., done in this general area.*

The cumulative analysis describes impacts that may result from the implementation of the Proposed Action when added to past, present, and reasonably foreseeable future actions. On page 4-31, the EA describes past or existing actions that have major influence including the road network, oil and gas wells, ranching and livestock facilities, power lines, and pipelines. As stated on page 4-30 of the EA, the only reasonably foreseeable development currently proposed within ARPA is the exploratory activity associated with the drilling of the 200 exploratory wells.

The analysis predicts that 60 miles of new roads, generally in the form of spur roads, and 100 miles of water and gas flow lines will be constructed during CBM exploration. Initial disturbance resulting from the implementation of the CBM exploratory program is projected to be 650 acres, and long-term disturbance is estimated at 200 acres (page 4-31 of the EA). With the exception of Pods 5 and 8, all of the proposed pods are accessible by county roads. The majority of the new road construction resulting from CBM exploration would be limited to spur roads from the existing road network. Also, the proposed CBM exploration projects are dispersed, with a distance of about 40 miles existing between the location of Pod 1 and Pod 9.

The estimated disturbance from the implementation of the Cow Creek project is 20.2 acres, which includes roads, pipelines, well pads, and other facilities. The only fences planned would be those placed around reserve pits or well head facilities constructed with the intent to protect wildlife, stock, and the public. Nothing in the implementation of the Cow Creek project or the 200-well exploratory proposal is anticipated to add to the impact that fences currently have on stock or wildlife.

- e. *We encourage all compressors to be the special, quiet-type engines that use "hospital mufflers." We have already forwarded the specific engine information to the operators.*

Research on noise levels affecting greater sage-grouse is presently ongoing. We are currently trying to obtain the latest research information available on the impacts of noise from oil and gas equipment such as compressors. Until further studies are complete, we will use the results from the studies conducted for the *Pinedale Anticline Oil and Gas Exploration and Development Project EIS* as a guide and will mitigate noise levels of authorized actions to no more than 10 dBA above background levels at the edge of greater sage-grouse leks. At this time, the use of quiet-type engines have not been proposed as mitigation for noise for this project.

- f. *The project may impact the Muddy Creek drainage in southwestern Carbon County. The EA states that surface disposal of CBM waters would be discharged to Dry Cow Creek, to Cow Creek, and to Muddy Creek, which provides a locally important fishery for brook trout and is being evaluated for reintroduction of Colorado River cutthroat trout. Muddy Creek also contains a wild population of one state-listed sensitive specie, the mountain sucker. We suggest the BLM consider potential downstream cumulative impacts due to sedimentation and water quality issues with surface discharge. From an aquatic habitat standpoint, subsurface injection of the produced water is potentially less damaging than surface discharge.*

There will be no discharge to Cow Creek or Muddy Creek as a result of implementation of this project. Page 2-11 of the EA states that Double Eagle has received an National Pollutant Discharge Elimination System (NPDES) permit from WDEQ permit for this project. The requirements of this permit allow Double Eagle to discharge no more that 180,600 gallons/day or 1.34 tons of salt per day into an ephemeral drainage (i.e., an unnamed drainage of Dry Cow Creek that runs through the project area), which eventually reaches an existing reservoir. As stated on page C3-5, Appendix C of the EA, the NPDES permit requires that water discharged from the CBM wells be totally contained within the project area; therefore, downstream impacts resulting from the surface discharge of CBM water are not anticipated to occur (pages 4-16 and C3-7 of the EA). Construction activities associated with project development could result in a slight increase of sediment load into drainages which eventually lead into Muddy Creek (page 4-16 of the EA). However, because of the small amount of disturbance (20.2 acres) associated with this project, and through implementation of the mitigation described in Chapters 2 and 4, the RMP, and the IDP, impacts to Muddy Creek from increased sedimentation should be kept to a minimum.

2. Double Eagle Petroleum and Mining Company

- a. *Several times throughout the document the BLM refers to the #1X-12 well operated by Double Eagle as a nonhydrocarbon producing well that only produces water. This is not true. The #1X-12 well has produced natural gas and oil since 1963 and was recently recompleted for CBM gas production from the Mesaverde Formation and has produced gas from that formation since August 2000.*

The EA acknowledges on page 2-27 that the X1-12 well was an existing gas well that was completed as a CBM well. The references to the produced water from the X1-12 well noted in the document are, in general, relating it to the reason for construction of the Little Snake River Conservation District reservoir that will be used to contain produced CBM water.

- b. *Throughout the document the BLM references Road Standards Manual Section 9113. Page 2-3 of the EA states that Double Eagle will gravel roads prior to moving in drilling equipment. Therefore, prior to drilling and completion and before determining if the wells are productive, Double Eagle will be required to expend a great deal of money in construction activities which could very possibly be unnecessary.*

The requirement to gravel, or have an appropriate surface, is a standard operating procedure for road construction within the Rawlins Field Office area, based on past experience.

Site-specific conditions are considered when looking at whether roads will require a gravel surface. Soils in the Cow Creek Project area are generally made up of clays and silts. This means without gravel surfacing, the operator will not be able to access the wells without DEEPLY rutting the roads, if at all. These deep ruts usually encourage traffic to leave the road and right-of-way and travel adjacent to the existing road, thereby creating additional and unnecessary surface disturbance and also constituting a trespass. Placing an adequate surface on the roads where the soils are poor, provides a better, safer, and less environmentally-destructive type of access, especially for projects where heavy equipment is used.

The Conditions of Approval (COAs) placed on Applications for Permit to Drill (APD) for the Cow Creek Pod include the following condition to minimize environmental impacts from the construction access roads: "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 weather conditions that suggest excessive rutting or erosion may occur without gravel" (see Appendix D).

If the wells are not productive, Double Eagle can remove the gravel and put it on another road.

- c. *Double Eagle has filed a Master Surface Use Plan (MSUP) with the BLM which is attached as an appendix to this document. This plan clearly states that Double Eagle has proposed to crown and ditch access roads and blade the well pad during the drilling and completion phase. If a permanent use of the surface is desired, the roads would be graveled. Double Eagle feels that BLM's requirement wastes a natural resource (gravel) and increases costs and effects of additional construction machinery before it is known if the well is productive. Therefore, references to prior graveling should be deleted.*

The Master Surface Use Plan is generally the operator's plan to construct development activities. However, based on the onsite inspection of the project area, analysis described in the EA, and standard operating procedures, Conditions of Approval (COAs) are attached to the Master Surface Use Plan (Appendix D of the DR) and are BLM's requirements to minimize the impact to sensitive resources within the project area. The COAs are based on site-specific conditions. In the Cow Creek Pod project area, the topsoils are generally made up of clays and silt, and graveling of the roads will be required. For these reasons, the text in the EA will remain as stated.

- d. *On page 2-8 of the EA, the reference to granting wells to the BLM at the conclusion of the project should be modified by inserting the phrase "upon Double Eagle consent."*

The wording has been changed to state, "Should The BLM elect to assume further responsibility of any CBM wells, consent will be obtained from Double Eagle, providing the requirements of Onshore Order No. 1, part VI, *Water Well Conversion*, are met" (see Appendix A).

- e. *On page 2-9, the diagram shows fencing around the well house, etc. This was not proposed in the MSUP and is not anticipated because of the small houses which will contain the wellheads; it should be deleted.*

The BLM would like to see all of the wellhead covers and pump panels fenced as it is presented in the EA (Fig. 2-4: Schematic of a Typical CBM Wellsite) and as PEDCO is doing at its well sites, because it is perceived as a liability issue. Cattle and ungulates in the area will rub on the well house, and this can push the wellhead cover against the well and possibly open valves or damage gauges, etc. Also, having a fence around the well head cover implies to the public that the equipment is "off limits." We do not want hunters using the well house as a gun rest or for other individuals to be tinkering with valves, etc.

While there is not an enforceable regulation requiring that well houses be fenced, it is standard operating procedure in the BLM and, because of this, the following COA is included in the DR:

"All well houses or well head covers shall either be fenced as shown in Figure 2-4 of the Cow Creek Pod EA or otherwise securely anchored to the ground so that livestock and wildlife cannot shift their structures' position by rubbing against them (see Appendix D)."

- f. *Page 2-13, numbers 4 and 5, address reservoir size. The actual size stated in the NPDES permit is 80 acres and 20 acres respectively. The word feet should be deleted.*

The change has been made in Appendix A of this Decision Record.

- g. *Page 2-19, item number 4, addresses road reclamation. The requirement should be more specific to project roads used or constructed by Double Eagle as shown in its Master Surface Use Plan (MSUP) and which Double Eagle has agreed to reclaim. The paragraph is written open-ended and could be interpreted to hold Double Eagle responsible for any roads, even those created long ago by other entities. The requirement holds Double Eagle to an unjust standard and should be changed.*

This statement has been clarified. See Appendix A of this Decision Record.

- h. *On page 2-24, performance of clearance surveys for plant species of concern is mentioned. No plants of concern were identified in the document within the project area. Therefore the reference should be deleted.*

Page 3-19 of the EA states that 11 plant species of concern may potentially occur within or near the Cow Creek Pod. While five of these species are unlikely to occur, the remaining six species have low to moderate potential to occur near the project area. Therefore, the mitigation will remain as described on page 2-24 of the EA.

- i. *On pages 2-8 and 4-8 of the EA, it was mentioned the portion of the unreclaimed area for each well pad will be 15' x 15'. This is not accurate because the MSUP clearly states that an area 100' x 100' will be required since the well pads have to safely accommodate a larger workover rig.*

The BLM will require that areas of the pad that are not being used during production be reseeded with native vegetation. We are not requiring Double Eagle to recontour the area until the conclusion of the project. After the pits have been backfilled, the area that will be regularly disturbed by routine well maintenance will be approximately 15'x15', including a vehicle turn-around area.

If Double Eagle needs to bring in a rig for workover operations, we will require that it reseed any disturbance created from such operations once the rig has been removed.

If these areas are not reseeded, halogeton and other opportunistic noxious weed species will likely become established on the location. The BLM's Authorized Officer will then be obligated to order Double Eagle to remove or spray the halogeton and other weeds and reseed areas of the well pad that are not needed for production operations.

- j. *Page 4-16 of the EA states that "construction and use of well access road crossings and road upgrades within the CCPA could contribute to an increase in sediment levels in Muddy Creek." Considering the confluence with Muddy Creek is some nine miles down drainage from the CCPA, and that the LSRCD Reservoir is projected to contain all the production water, this statement seems very hypothetical.*

The contribution of sediment from highly erodible soils such as found in the Cow Creek area into a watershed system is highly likely a result of project construction and road use. The EA correctly states on page 4-4 that water erosion would be a direct impact in newly-disturbed areas and this may cause increased sedimentation into drainage channels or impoundments. The analysis concludes that the susceptibility to erosion would only be a short-term impact and the implementation of construction and reclamation measures described in Chapter 2 would minimize the Cow Creek Project's contribution to sediment loading in the Muddy Creek watershed.

3. Petroleum Association of Wyoming

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

The project-wide mitigation measures and procedures identified in the Cow Creek Pod 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 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. *In section 2.1.2.1, Access Road Construction, it states that access to the drill site locations from the existing road network already in place would be provided by new and upgraded crowned, ditched, and surfaced roads. In the exploratory phase of development, it is not yet determined that complete road construction is necessary and, therefore, this requirement may not be environmentally prudent. PAW recommends that, to minimize surface disturbance, roads and locations constructed during the exploratory phase of the project should be crowned and ditched, but left unimproved until either the pod has demonstrated economic viability or the entire project is economically feasible.*

Topsoils in the CCPA are generally made up of clays and silts. Without gravel surfacing, the operator will not be able to access the wells without excessively rutting the roads, if at all. These deep ruts usually encourage traffic to leave the road and right-of-way and travel adjacent to the existing road, thereby creating additional and unnecessary surface disturbance and also constituting a trespass.

The requirement to apply appropriate surfacing aids in erosion control and can lead to the reduction of sediment release into the Muddy Creek watershed. In addition, placing an adequate surface on the roads where the soils are poor provides a better, safer, and less environmentally-destructive type of access, especially for projects where heavy equipment is used. If the Cow Creek Pod CBM wells are proven not to be productive, Double Eagle can remove the gravel and put it on another road.

- c. *On page 2.1.3.1, Well Production Facilities, water wells and produced water would be available to the BLM. Granting water wells to the BLM at the conclusion of the project should be subject to concurrence with the operator.*

The wording has been changed to state, "Should the BLM elect to assume further responsibility of any CBM wells, consent will be obtained from Double Eagle, providing the requirements of Onshore Order No. 1, part VI, *Water Well Conversion*, are met" (see Appendix A).

- d. *The applicant is required to submit a detailed water management plan that addresses water discharge, treatment, potential impacts, and mitigation and monitoring. This plan, along with mandatory permitting requirements for the State of Wyoming, will adequately address concerns relating to water. The BLM should remain flexible regarding water disposal methods. Also, the BLM should include an analysis regarding beneficial uses of surface discharge water.*

In the case of the Cow Creek project, several different types of disposal methods are being considered. The BLM recognizes the authority of the State of Wyoming to grant discharge permits and regulate permits not to exceed limits set by the Colorado River Basin Salinity Forum. The IDP limits surface discharge in the Colorado River Basin system in order to avoid the potential for significant impacts that could result from exceeding the limit of 350 tons of salt per year, per operator, as adopted by the Colorado River Basin Salinity Forum

and state requirements. The operators do have the option to explore alternative methods of water disposal when the interim projects are located within the Great Divide and North Platte River Basins.

- e. *Section 2.1.9, Project-wide Mitigation Measures and Procedures, is confusing. It is not apparent which protection measures are applicant-committed and which are agency-required. In future documents, The BLM must remain consistent and should include applicant-committed measures in Chapter 2 and agency-required measures in Chapter 4.*

The measures identified in Section 2.1.9 of the Cow Creek Pod EA are actions or features which are included as part of the Proposed Action that could be taken to avoid or reduce projected impacts. These measures can be proposed by the applicant or reflect standard operating procedures identified by The BLM. The mitigation described in Chapter 4 reflects additional measures apart from those previously identified that would be applied to avoid or reduce impacts. The measures identified in Chapter 4 would be considered for application on BLM-administered lands.

- f. *Clarify the description under section 2.1.9.2.3 of the EA, which states, "All roads on public lands which are not required for operation and maintenance of field production should be permanently blocked, recontoured, and reseeded." Operators have no authority over roads that they do not construct. Only those roads constructed pertinent to this project should be subject to this mitigation measure.*

This statement has been clarified. See Appendix A.

- g. *Under section 2.1.9.2.9, Wildlife, it states that, for listed and BLM sensitive species, the distance of the buffer zone should be increased to within one mile of the proposed well site. Under the Endangered Species Act, mitigation measures are implemented for the protection of potential, candidate, or threatened and endangered species and are mandated by federal law. These measures should not be automatically implemented for the protection of BLM sensitive species. This is an extreme requirement and adequate studies have not demonstrated the need for such protection. This requirement pertaining to BLM sensitive species should be deleted from the EA.*

The implementation of the one-mile buffer zone in order to protect sensitive species is consistent with mitigation found in the CD/WII Record of Decision, protection afforded raptors under the Migratory Bird Treaty Act and the RMP and, therefore, the reference to it will remain as written in the EA.

- h. *Section 2.1.9.2.9, Wildlife, item number 10, requires that regular drivers undergo training. This requirement should be amended to state, "The operator shall provide training to all drivers entering and leaving the project area regarding the observation and proper avoidance techniques of animals likely to be present on the road."*

As the wording you suggest will not substantially change the meaning described in item 10, the requirement will remain the same.

- i. *Under section 2.1.9.2.10, Special Status Species, the requirement currently states that the operator shall “perform clearance surveys for plant species of concern.” The measure should be clarified to state, “Requirements for clearance surveys should be limited to those plants currently listed on the threatened and endangered species list under the Endangered Species Act.”*

The objective of the BLM's sensitive species policy is to ensure that actions on public lands do not contribute to the need to list the species under the provisions of the Endangered Species Act (Instruction Memorandum No. WY-2001-040). According to BLM Manual 6840, Special Status Species Management, conservation of special status species means the use of all methods and procedures necessary to improve the condition of these species and their habitats to the point where their special status recognition is no longer warranted. The requirement to clear the area for special status species is incorrect and the word “clearance” will be removed from the requirement. See Appendix A of this Decision Record for the change in this text.

- j. *It is stated under section 2.1.9.2.12, Noise, that the BLM may require noise levels be limited to no more than 10 dBA above background noise at greater sage-grouse leks. There is no mitigation in the RMP regarding noise and its effect on greater sage-grouse leks; however, there is an ongoing effort with the BLM and the Wyoming Game and Fish Department to monitor the possible effects noise may have on the species during seasonal times of the year. PAW recommends the BLM insert language into the EA that recognizes the agency should remain flexible with noise mitigation while those studies are being conducted, and the mitigation may be adjusted based on the results of 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 typically-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 no more than 10 dBA above background levels at the edge of greater sage-grouse leks.

- k. *PAW requests clarification from the BLM regarding the need for a cultural resources mitigation plan. It is PAW's position that cultural site-specific surveys, block surveys, and consultation with SHPO prior to project approval is the recommended mitigation plan for the protection of cultural/historic resources. Additional mitigation plans are costly, time consuming, and redundant for agency and industry. With the current requirements in place, no additional plans are necessary. The mitigation measure should be deleted from the EA.*

A Cultural Resource Mitigation Plan is prepared if adverse effects to cultural/historical properties cannot be avoided. A Cultural Resource Mitigation Plan can address site-specific issues such as the number of test units required to effectively evaluate a site and the appropriate dating methods to be used. This plan does not duplicate work conducted during a Class III Cultural Resource Survey.

4. Terry Svalberg, United States Department of Agriculture, Bridger-Teton National Forest

- a. *The discussion on page 1-1 of the EA should describe the Cow Creek project, but also provide a description of the larger Atlantic Rim Coalbed Methane Project. It would be good to explain what data gathered from drilling these wells will be used in the preparation of the EIS for the Atlantic Rim project and how it will be used. This may provide support for the interim drilling policy, especially Section 1506.1 (c)(3).*

An accurate description of what might occur within the ARPA is very speculative at this time. Exploration drilling was allowed in this area because very little drilling had occurred in the past in the target formations. Wells developed under the interim drilling policy will be used to evaluate the commercial feasibility of producing CBM from coals in the Mesaverde Group. Other information gathered from this drilling would include the number of wells required to optimally develop a pod, which coals are gas productive, which drilling and completion techniques are economical, can enough water be removed from the coals to trigger gas production and in what time frame, what depths or pressure windows may be preferred to target economic gas, and what type of water disposal techniques are viable (e.g., reinjection, aquifer recharge, surface discharge).

- b. *On Table 3-1, it is shown that wilderness is not located in the CCPA and is not discussed in the text of the EA. Potential impacts to wilderness areas (not just Class I wilderness areas) should be included in the cumulative effects analysis.*

As stated on page 4-33 of the EA, cumulative impact emissions from the implementation of past oil and gas projects and the proposed 200 interim well proposal is covered under the air quality modeling completed for the CD/WII project. Any additional development within the 870 well limit proposed for additional development is considered to have been analyzed as part of the CD/WII cumulative study. As stated on page 4-17 of the CD/WII DEIS, "Since the proposed project and cumulative emissions constitute many small sources uniformly spread out over a large area, discrete visible plumes are not likely to impact the PSD Class I and II sensitive receptors, but the cumulative visibility impacts (regional haze) is a concern." The analysis concludes that, because of the several numerous "reasonable, but conservative" analysis assumptions, which may actually compound one another, the projected impacts represent an upper estimate of potential air quality impacts which are unlikely to be reached. Furthermore, the air quality analysis to be performed as part of the Great Divide Resource Management Plan (RMP) modification will quantify existing and proposed industrial growth in the region. Both the Atlantic Rim and RMP air quality studies will be used to determine cumulative impacts prior to BLM approval of future natural gas and coalbed methane development.

- c. *Under the discussion on page 3-4, it would be helpful to determine potential affects downwind if a wind rose was included here. Your description indicates that the annual mean wind speed is 10 mph, but you only account for the direction the wind blows 37% of the time.*

A wind rose is provided in Appendix F.

- d. *Paragraph 1, on page 3-5, states that there are limited air pollution sources in the area. Limited is a relative term and the sources should be quantified or defined relative to something that is known. I could not find in the document any reference to, or map of, other air pollution sources in the area (e.g., the Craig Power Plant, South Baggs gas field, Continental Divide gas fields).*

A map depicting currently-approved natural gas actions and areas of potential and approved CBM development shown in relation to regional PSD Class I and II areas is included in Appendix F. The general location of the Cow Creek Pod in relation to this activity is also included on the map.

- e. *Regarding the discussion on page 3-7, please note that the Shoshone and Bridger-Teton National Forests also collect data to monitor long-term lake chemistry and precipitation chemistry in wilderness areas.*

Text has been added to the discussion on page 3-7. See Appendix A of the Decision Record.

- f. *On page 4-3 it states that emissions generated from compressor operation would contain negligible amounts of SO₂ and particulate matter due to the composition of coalbed methane gas. Please define negligible. There is no mention of emissions related to the pumps being used to dewater the coalbeds and pump water to injection wells. Page 4-3 of the EA states that emissions resulting from the implementation of this project would be the same as those found on similar oil and gas projects but on a much smaller scale. Small is a relative term, the emissions should be quantified or defined relative to something that is known. There is a conflict with paragraph 4 on the same page which states the produced gas is nearly 100 percent methane, which is not all similar to emissions defined in the CD/WII EIS.*

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

**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-Best available control technology (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).

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 Cow Creek 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 methane gas stream than in the natural gas stream, and the absence of dehydration and gas processing in the Cow Creek Pod, will result in lower VOC and HAP emissions for eight wells (and associated equipment) than analyzed for eight wells in the CD/WII study.

- g. *Page 4-3, paragraph 6, states the eight-well project described in the EA is well under the 3,000 well air quality analysis prepared for the CD/WII EIS, considering only 2,130 wells were approved. However, this does not take into account other development which has occurred or been approved since the CD/WII EIS was completed, such as Hanna Draw, Pinedale Anticline, Seminole Road, and others. Please include a table showing recent development and the number of wells approved in your Decision so that the public can see where we really are in relation to accounting for the 3,000 wells analyzed.*

Up-to-date information regarding drilling activity and completed wells can be found on the Wyoming Oil and Gas Conservation Commission website at wogcc.state.wy.us. Currently, within the CD/WII EIS project site, 2,073 of the permits have been issued, but only 1,082 of the 2,130 wells approved have been drilled and completed. The remaining 870 wells (of

the 3,000 modeled) were held back for approval in order to allow future development in the area under the jurisdiction of the Rawlins Field Office. Projects in the Rawlins Field Office area included under the 870 well umbrella are Seminole Road (19 wells), Hanna Draw (25 wells), the 200-well interim development in Atlantic Rim project area, and other isolated drilling occurring in the field office area that was not considered under an EIS. The Pinedale Anticline EIS conducted air quality modeling and looked at cumulative impacts associated with the development anticipated at the time. The proposed 385-well Desolation Flats project will complete air quality modeling and analysis of cumulative impacts in an EIS.

- h. *On page 4-4 there is not relative quantification of impacts. It is actually confusing because the No Action Alternative will have no effect. A discussion of the impacts associated with previously permitted wells should be included.*

Because the wells proposed for drilling have been included as part of the 3,000 well model completed for CD/WII, which included previously-permitted activities, the conclusions of the Continental Divide cumulative air quality impact analysis for that project is applicable to the Proposed Action described for the Cow Creek Pod development as well. No separate analysis was conducted for this eight-well project. You are correct in stating that for air quality, the impacts for the No Action Alternative are the same.

- i. *Page 4-3 states that emissions resulting from the implementation of this project would be the same as those found in CD/WII, but on a much smaller scale. If, in fact, the emissions are the same, you should include an analysis of Hazardous Air Pollutants (HAPs) and Volatile Organic Compounds (VOCs) in this section.*

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 Cow Creek 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 NO_x, 21.6 tpy VOC, 7.3 tpy HAPs, and <0.1 tpy SO₂ and PM₁₀. The presence of fewer VOCs and HAPs in methane gas stream than in natural gas, and the absence of dehydration and gas processing in the Cow Creek Pod, will result in lower VOC and HAP emissions for eight wells (and associated equipment) than analyzed for eight wells in the CD/WII study.

- j. *There is no Cumulative Impact Assessment Area defined for Air Quality.*

The cumulative impact analysis area is the Laramie Air Basin, see page 4-32 of the EA.

- k. *The USDA Forest Service is not listed under Federal Offices on page 5-1. We did provide comments during initial scoping and during the second scoping. Scoping issues raised in the July 23, 2001, letter do not appear to be addressed in this document.*

The omission is noted and Forest Service is added under Federal Offices, see Appendix A of this Decision Record.

5. Wyoming State Engineer's Office

- a. *A review done in this office has revealed that permits to appropriate ground water for each of the proposed coalbed methane wells have been obtained from the State Engineer's Office. However, none of the permits makes any reference to any subsequent beneficial use of the water from the coalbed methane wells.*

Double Eagle has been notified that any use of CBM water that is determined to be a beneficial use, including use of LSRCD reservoir for stock watering, or any use of CBM water for dust abatement, will have to be permitted by the Wyoming State Engineer's Office.

- b. *The EA does not clearly state where the water that will be used for hydrostatic testing of project pipelines would be obtained. Permits may be required from this office from whatever source is identified as supplying the water for hydrostatic testing.*

Page 2-22 of the EA, item 12, recognizes that, "Hydrostatic test water used in conjunction with pipeline testing and all water used during construction activities [will be extracted] from sources with sufficient quantities and through appropriation permits approved by the State of Wyoming." At this time, Double Eagle does not anticipate conducting hydrostatic testing of their gas gathering lines, and no new sales lines are proposed under this project.

6. Oregon-California Trails Association

- a. *As with the Blue Sky Pod, we are most concerned about any possible impact on the Cherokee and Overland Trails.*

Neither trail is located within or near the CCPA.

7. Office of State Lands and Investments

- a. *The environmental assessments for these pods are part of a cumulative approach to effects and restrictions within the larger area being reviewed for CBM, and as such, this office wishes assurance that the cumulative affects will not be deleterious to future development on State lands in the general area. This concern is especially relevant in the area as there is the incidence of split estate with the federal government owning the surface. State lands may require access through federal surface.*

Title V of the Federal Land Policy Management Act authorizes the BLM to issue right-of-way grants. The BLM cannot deny access by right-of-way grant through public lands to private/state mineral owners. However, the NEPA process will look at alternatives to ensure the most environmentally-preferable route is chosen to reach this property, even if it is not the closest, most economic, or preferred route by the mineral owner or landowner.

8. United States Fish and Wildlife Service

- a. *The information provided in the EA pertains to the area of the pod occupied by the prairie dog town. Information on mountain plover habitat suitability in the area encompassing the rest of the pod should be provided to our office.*

The BLM determined that no plover habitat was present in the areas proposed for disturbance during onsite investigations conducted on August 13, 2001. Because no plover habitat was identified, the BLM determined that there was a no effect situation and, therefore, we were not required to contact the Service.

- b. *The project states that hydrostatic testing will be conducted on pipelines. If water is used for this purpose that may be hydrologically connected to the Colorado River, this may result in a depletion to the Colorado River System, and consultation pursuant to Section 7 of ESA should be initiated.*

Although no new product pipelines will be constructed as a part of this project, once a site-specific proposal is received by the BLM, it is standard operating procedure as part of the review for threatened and endangered species to require a depletion analysis for projects in the Colorado River System.

- c. *Coalbed methane produced water can contain a variety of trace elements including arsenic, selenium, barium, and zinc. Water quality testing of Mesa Verde wells in the project area revealed selenium concentrations ranging from <0.005 mg/L and < 5µg/L. This level of precision is insufficient to allow the Service to evaluate potential impacts to fish and wildlife. Surface discharge of produced water with selenium concentration exceeding 2µg/L may create a risk for bioaccumulation in fish and sensitive species of aquatic birds. The current aquatic chronic criterion of 5 µg/L selenium is not adequate for preventing adverse effects on fish and aquatic birds. Reinjection of produced water has been recognized as an affordable and logistically feasible method of produced water disposal and pressure maintenance by the petroleum industry for decades. Reinjection appears to eliminate adverse impacts associated with erosion and sedimentation and will eliminate the risks to migratory birds posed by the evaporative concentration of selenium and other trace elements.*

While it is recognized that reinjection does reduce surface impacts associated with produced CBM waters, in some cases these waters can serve a beneficial use. In the case of the Double Eagle project, the production of water has occurred for several years through a casing leak in a conventionally drilled well. When this well was recompleted as a CBM well, the WDEQ/WQD felt that permitting the recompleted well for water production up to that amount which has existed for several years was appropriate. The Clean Water Act provides that the discharge of any pollutants from a point source must be regulated under the NPDES program. The permits contain the limitations and conditions that will ensure that the state's surface water quality standards are protected. In Wyoming this is administered under the authority of the WDEQ/WQD. A public notice is published and comments are accepted for these permits.

The 5µg/L limit allowed in the state NPDES permit reflects the federal standard, and unless comments are received by WDEQ during the public comment period that reflect concerns that constituent levels may be exceeded to the point that wildlife or other resources may be affected, no less than the federal standard for effluent levels will be required by the permit.

9. Biodiversity Associates

- a. *Produced water will deplete aquifers and compromise the ability of aquifers and water table to recharge. The EA notes that a complete aquifer drawdown analysis will be completed for the Atlantic Rim CBM EIS. The failure to provide a complete analysis of aquifer drawdown in the Cow Creek EA constitutes a violation of NEPA.*

The Almond Formation coal seams, which are targeted for production, are classified as confined to semiconfined aquifers because they are bound by impervious to semipervious layers of shale and siltstone. CBM test wells completed in the Almond Formation coal seams exhibited shut-in hydrostatic pressures indicative of flowing artesian conditions. Based on existing hydrogeologic information, groundwater in the Almond coal seams at the completion depths in the existing CBM wells is hydraulically isolated from shallow groundwater and surface water resources (page 3-14 of the EA). This information was further confirmed by the water testing completed to satisfy the requirement of the USFWS that CBM produced water is not contributing to flows in the Colorado River system. The USFWS has reviewed this information and, in a letter dated December 14, 2001, determined that, based on the isotopic analysis, the Sun Dog and Cow Creek Pods, if constructed as proposed, are not expected to result in a water depletion to the Colorado River basin.

The analysis presented in the EA concludes that lowering of the hydraulic pressure head in the coal seam may induce a slight leakage of water through semipervious shale layers; this leakage would be minimal and drawdown effects would only become apparent after a significant period of time (page 4-8 of the EA). Because drawdown is anticipated to be nonexistent to minimal during the life of this exploration project, no aquifer drawdown analysis will be completed; however, any information gathered through the monitoring required for the interim exploration project will be included in an aquifer drawdown analysis should full field development occur.

Also note that the proposed project is looking at methods that would enhance the recharge of shallow aquifers. The aquifer recharge well will recharge the Lewis sands, at approximately 400 feet in depth. In addition, some infiltration is expected from the existing LSRCD reservoir and the off-channel reservoir that could provide a shallow, beneficial water supply within the project area.

- b. *If the Cow Creek Pod project is implemented, it would violate NEPA (40 CFR 1506.1) because the Interim Drilling Policy and associated activities will significantly adversely affect the environment, and are inseparably linked to the Atlantic Rim CBM project, and would prejudice outcomes and alternatives of the subsequent EIS. For example, the No Action alternative for the subsequent Atlantic Rim project EIS would be unavailable if these wells are already drilled. Moreover, the implementation of this project violates NEPA because the BLM is segmenting the proposed projects.*

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 approach is being taken in the Hanna Basin

(Hanna Draw and Seminole Road projects). If exploration activities in both basins indicate that CBM is economically producible, a “No Action Alternative” does not mean no development. A No Action Alternative would be a denial of the proposal as described in the Proposed Action.

The purpose of preparing the Cow Creek Pod EA is to allow for exploration drilling and 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 was 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, the EIS will fully disclose impacts associated with the development of the Atlantic Rim Coalbed Methane Project.

- c. *The project violates FLPMA because it is outside the reasonably foreseeable development scenario of the RMP, which does not authorize such actions. The EA states that the BLM considers existing RMP oil and gas decisions to be adequate for CBM; however, the impacts associated with CBM development and production are dissimilar to conventional drilling.*

The RMP states the entire planning area is open to oil and gas leasing and does not make a distinction 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 or plan amendment [43 CFR 1601.0-5(b)].

- d. *The Atlantic Rim CBM area contains undeveloped lands of roadless and undeveloped qualities; however, the BLM has never performed an adequate wilderness inventory. By*

failing to maintain an up-to-date inventory of resources, including potential wilderness areas, the Rawlins Field Office has violated FLPMA and other laws and regulations. The BLM must conduct an adequate inventory of the entire area before this project can be 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 5,000 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, because to be considered for a wilderness inventory unit the area must contain 5,000 acres of contiguous public 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 that, “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, and mitigation in the RMP, in addition to the IDP, played a role in determining where and what exploration activities could occur within the CCPA.

According to the H-1790-1, BLM NEPA Handbook, Chapter IV, Preparing Environmental Assessments, page IV-3, alternatives to the proposed action must consider and assess 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 Cow Creek Pod Project is outlined 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 Cow Creek 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 4-32 of the EA, provided in the cumulative impact discussion, presents the cumulative impact areas for each resource impacted by the Cow Creek Pod Project. In general, two main factors determine whether other actions should be included as part of the cumulative impact analysis and they are 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, in the case of the Cow Creek Pod Project, the project area does not contain, and no project component would disturb, any crucial winter range for elk; therefore, 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 development of a proposed pod impacts this range. Table 4-3, page 4-32 of the EA, takes this approach by breaking down what resources may be cumulatively-affected by the implementation of the Cow Creek 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 Cow Creek Pod Project would occur only in the Muddy Creek watershed, in Pods 5, 7, and 8.

At this point, 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 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, such as oil and gas drilling and ranching, is the 200-well proposal.

- h. In a related matter, on page 4-11 of the EA, the BLM admits that, "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 that 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 of the project area 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 many species exist on lands adjacent to the Project Area and would support any individuals that may be temporarily displaced." It also states that 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 4-11 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. The EA, at page 4-15, recognizes that "greater sage-grouse can be impacted by other activities associated with CBM development including increased human activity, increased traffic disturbance, and pumping noise." The stipulation, described in the EA at page 2-23 to "restrict construction activity" during the nesting period, is vague and does not do anything to reduce or eliminate pump noise during this critical period. However, the EA, on page 4-15 states that impacts to greater sage-grouse is expected to be minimal. Any impact to the individuals should be considered an impact to a population and, therefore, must be considered unacceptable. Stipulations under the Proposed Action would protect lands within ¼-mile of a greater 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 greater 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 nesting habitat. The timing stipulation is applied to the area 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 greater 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 do have the potential to occur within the project area; however, during prairie dog mapping, no burrowing owls were observed. The BLM raptor timing stipulations would also protect areas where burrowing owls are observed. At this time, the USFWS has not indicated that a Biological Assessment (BA) for the Cow Creek Pod project is required.

- k. *The CCPA includes a white-tailed prairie dog colony. This species is declining throughout the West and may soon be added to the endangered species list. The EA does not evaluate impacts of the proposed project on the white-tailed prairie dogs. There are no estimates of size or trend of the colonies, nor are there mitigation measures to reduce impact to the species.*

Although the white-tailed prairie dog is on the BLM Sensitive Species list, it is not proposed for listing as a threatened and endangered species (T&E) and is not afforded any special protection through the Endangered Species Act. Because it is on the BLM's Sensitive Species List, impacts to the white-tailed prairie dog are usually minimized by asking the operator to move the well, road, or other facility 50 meters from a prairie dog town. This was done in the Cow Creek Pod project area when the access road to well site number 44-7 (section 7, T. 16 N., R. 91 W.) was moved 50 meters from a prairie dog town identified during on-site inspections.

- 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. 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 related. Again these are generally casual use type of activities which are similar to those conducted by hunters and other recreationists and are not anticipated to result in an increase in impacts from those of current users.

- m. *The EA states that produced water will be discharged into intermittent streams above existing collection reservoirs and into evaporation ponds. The EA notes that infiltration from the LSRCD Reservoir and the off-channel reservoir would provide recharge to shallow aquifers. The EA at page 4-7 categorizes this as a beneficial impact. If the water is saline and alkaline, impacts to fish, amphibians, and invertebrates could be massive. Several threatened and endangered fish species are present downstream from the Cow Creek Pod project. A high level of clarity regarding potential impacts to T&E species is needed to determine if the Proposed Action would violate the Endangered Species Act and BLM's Sensitive Species policy.*

The EA, on page 4-16, states that no downstream flow is planned, but limited seepage from the dam does occur creating a wetted channel, which is a pre-existing, localized condition. If there is measurable discharge occurring at this dam, it must be reported and a water sample taken. All water reaching this point of compliance (POC) must meet the standards set by the State of Wyoming in the NPDES permit. In addition, the WDEQ is requiring the POC standards to be protective of the quality standards of Class 2 or 3 waters and are calculated as 20 percent of the water quality standard. All produced water will be discharged in a manner that it will be contained within the project area (C3-7 of the EA). Overall, the project is not expected to impact T&E and fish species of concern downstream from the project area.

- n. *We would like to point out that 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, 2002. 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 Cow Creek Pod project EA.

- o. *Using the same sources as the BLM, we obtained a list of species of special concern. Upon comparing it to Appendix D in the EA, we noticed that the northern many-lined skink, the milk snake, Hooker wild buckwheat, and western phacelia were wrongfully excluded. In addition, the plant species of concern and the reptile species of concern which the BLM determined may occur in the Cow Creek Pod project area were not addressed in the body of the EA.*

The concerns you brought up regarding sensitive species you feel should be on, but not shown on the BLM sensitive species list, are 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 pipelines 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. The EA describes, on page 4-13, how the project will result in some direct loss of habitat and forage and that disturbance of big game species during the parturition period and on winter range can increase stress and may influence species distribution. The actual acreage of big game habitat that becomes unusable as a result of this project can 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 subsequent NEPA analysis should full-field development prove feasible. Impacts to elk from roads associated with the Cow Creek Pod project are expected to be minimal given the small amount of disturbance (0.004% of that range type in the Sierra Madre Herd Unit) and the available undisturbed habitats. In addition, the EA, at page 4-14, states some studies have also found "elk do become easily conditioned to patterned human activity."

- 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 determined 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 CCPA tend to be clayey, and no recommendation was made to line these pits.

The requirement you cite to limit construction activities within 500 feet of surface water or riparian areas is found in Appendix A, Standard Mitigation Guidelines for Surface Disturbing Activities, Great Divide RMP. However, the 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 Cow Creek Pod project area, the access road through the project area will cross two ephemeral streams. The Conditions of Approval for the Cow Creek Pod project explain the culvert design that will be required for these crossings in order to protect stream values.

- 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.*

Due to the lack of active faults, it is highly unlikely that a CBM program would result in enough change to trigger the tectonic stresses required to create an earthquake. In CBM, the seam is not totally dewatered; 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 enough 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 fracturing fluids on groundwater or other resources. It is well-known that fracturing is a common practice in CBM extraction and that the fracturing 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. *It is imperative that reclamation requirements include stipulations that clearly mandate the use of native species for reseeding purposes. Exotic species such as crested wheat grass and kosha are especially deleterious and must be excluded from reseeded lands.*

Disturbed areas would be seeded and stabilized in accordance with BLM-approved reclamation guidelines (page 2-23 of the EA). The reclamation plan for the Cow Creek area is described in the Master Surface Use Plan, Appendix D, which shows the seed mix and COAs that must be met for construction and reclamation of this project.

- u. *The effects of the project on biological soil crusts have not been examined. These soil crusts, consisting of bryophytes, cyanobacteria, fungi, lichens, and mosses, fulfill an important role in desert ecosystems, effectively increasing soil temperature and rainfall absorption while preventing runoff and attendant erosion. Even after reclamation efforts, biological soil crusts will take decades to recolonize disturbed sites.*

The EA, on page 4-4, recognizes that stripping of the topsoil during construction activities associated with the Cow Creek Pod project would result in loss of soil structure, mixing of various textures, and the solution of surface organic matter and subsequently soil biota. Because the project will only disturb 20.2 acres and, with the use of proper construction and reclamation techniques and implementation of mitigation described in Chapter 2 of the EA, the analysis concludes that impacts to soil resources in the project area would be minimal.

- v. *The EA mentions that a 500-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 at the time of construction by the BLM on a case-by-case basis. While the BLM will attempt to implement this mitigation measure, in some cases there might be an advantage to constructing a road inside of the 500-foot buffer where locating the road outside of 500 feet may result in greater impacts to other resources that may be present (e.g., T&E habitat, cultural resources).

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

Page 2-22 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. Although Double Eagle is allowed to surface discharge water resulting from CBM production in the Cow Creek Pod, it was the one exception. In addition, the amount of sodium that Double Eagle is allowed to discharge is restricted under its approved NPDES permit, and all water discharge is to be contained within the project area. The requirement to inject produced water for all other projects proposed by CBM operators 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.

The Muddy Creek Coordinated Resource Management Group has worked since 1990 to improve the Muddy Creek watershed using a variety of techniques including 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 as preferable.*

As stated in the Master Surface Use Plan, revegetation efforts will comply with BLM specifications. The seed mixture, fertilizer and mulching requirements, seeding depth, and seed drilling specifications will be developed in consultation with the BLM. The Master Surface Use Plan states that the soils have good reclamation potential provided the hydrologic hazard of water erosion is mitigated through use of water breaks and drainage structures in recontoured areas (Appendix D, page 12).

- 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/directional drilling would be difficult in the CCPA.

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 three subgroups of coals, with 8 to 12 seams ranging in thickness from 1 to 10 feet. Some Almond coal seams correlated between wells over long distances, but there are still a high number of seams or riders that do not 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 and, therefore, yield 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. In addition, 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 in most of this project area, and this would limit the distance that could be drilled from the surface location. Also, 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 six 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.

10. NATIONAL WILDLIFE FEDERATION

- a. *The Environmental Assessment for the Cow Creek 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 at 40 CFR 1506.1 discuss the requirements that must be met to allow limited activities during the preparation of an EIS. The Interim Drilling Policy (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. The IDP requires that no surface-disturbing activity will be allowed until a NEPA document has been completed and a Finding of No Significant Impact is made.

The IDP is a policy to guide activity while collecting data to conduct an environmental analysis. Sporadic CBM drilling had occurred on the lands in the project area, but no real beneficial information had come from these wells.

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, at 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 precedent because other IDPs have been prepared. Most recently, we used the IDP process to manage exploration activities while preparing the CD/WII EIS and the Desolation Flats EIS. The basic criteria in establishing these IDPs were for exploration drilling to avoid, as much as possible, sensitive resource areas. These areas had been determined to include ACECs, crucial winter ranges, greater 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 reasonable level during completion of the EIS. The basis for the criteria described in the IDP document is 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 reviewed by the public. And, as was done with the Sun Dog Pod proposal, the BLM will review the EA and the public comments

and 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 was revised to 228. Based on sound reservoir management principals, the 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 CCPA.

- 2) *The IDP allows wells in the nine pods the operators have proposed. Did the 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 resource areas. Placement of the 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 area 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 are believed to cause significant impacts to the environment or prejudice decisions to be made as result of the Atlantic Rim CBM Project EIS, then a lower number of wells would be considered.

- 4) *The IDP specifies that required injection wells and monitoring wells will not count toward the well limit. Drilling and using monitoring and injection wells have environmental impacts, so 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 would 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 1 acre of initial disturbance for each of these wells and a life-of-project disturbance of .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 .005). Disturbance from the two injection wells proposed for the Cow Creek Pod Project is described in the EA on page 2-7 and on 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 Cow Creek Pod Project does not overlap the Overland Trail; 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 IDP limits water disposal to reinjection for operations located within the Colorado River Basin (with the exception of the Cow Creek Pod) with the intent to allow CBM exploratory activities 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 reduce salt loading in watersheds that lie within the Colorado River Basin. Furthermore, the impacts to groundwater from reinjection were projected to be minimal because the State of Wyoming requires that all formations into which water will be reinjected to contain waters of lower quality. Also see response to 3d.

- 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 USFWS guidance necessary to protect black-footed ferrets on public lands. The USFWS has reviewed this requirement and requested the BLM to add the last paragraph (page A-4, Cow Creek 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, it 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 field office has determined that the timing stipulations adequately protect big game crucial winter range for a single species. If it was determined that, through further analysis, additional mitigation was necessary to protect a single specie’s 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 these corridors at critical use times?*

The requirement was placed in the IDP to avoid the simultaneous drilling in two adjacent pods if proven big game migration corridors were present. Pages 3-21 and 3-22 of the EA state that no known pronghorn antelope, mule deer, or elk migration routes exist in the CCPA. However, there is the potential that pronghorn antelope migrate at the southern end of this pod to access crucial winter and year-long range located on the western side of the pod. Timing stipulations, and given that no drilling is currently planned south of the Cow Creek Pod, should adequately protect pronghorn antelope migrating into the project area.

- 10) *The IDP requires installation of fish passage structures for roads which cross drainages with fisheries concerns as identified by the BLM. Have these drainages already been identified? What criteria were 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 Cow Creek Pod Project area are subject to this requirement. If road construction must occur over a drainage with fisheries potential, the construction would be based on information gathered during the project on-site visit and this information would be present 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 special recreation areas or contain designated recreation sites. The concerns you identify are addressed through mitigation measures described in the Cow Creek Pod EA in sections 2.1.9.2.5, 2.1.9.2.11, 2.1.9.2.12, and 2.1.9.2.13.

- c. *The Cow Creek 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, and mitigation in the RMP, in addition to the IDP, played a role in determining where and to what extent exploration activities would occur within the Cow Creek 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.**

- d. *The Cow Creek 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 Cow Creek 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 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 sequences 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 Cow Creek 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 Cow Creek Pod EA does not address how CBM drilling will affect access to the Atlantic Rim for recreation.*

The Cow Creek Pod is over 15 miles from the southernmost portion of the area referred to as Atlantic Rim. There are no plans to restrict the use of any county road or BLM resource road as a result of implementing the Cow Creek Pod project. Oil and gas development has been ongoing in the Cow Creek Unit since 1959, and we are unaware of any conflicts with access to Atlantic Rim resulting from energy development in this area.

- 2) *The RMP states that surface disturbance from oil and gas exploration and development would be restricted in certain areas such as greater sage-grouse leks and high priority habitat, yet Figure 4-1 of the Cow Creek Pod EA shows crucial pronghorn winter range, mule deer crucial winter range, white-tailed prairie dog colonies, and sage grouse lek buffers exist within the project area. This is not consistent with the RMP and is therefore in violation of FLPMA.*

No CBM drilling is allowed in any greater sage-grouse lek and no known greater sage-grouse leks are present in the project area. Drilling is restricted in the sensitive resource areas you describe under the terms described in lease stipulations, COAs (see Appendix D), and guidelines of the IDP.

f. *The Cow Creek Pod EA violates NEPA by failing to consider other reasonable alternatives. By considering only a "No Action" Alternative to the proposed plan, the Cow Creek 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 to 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 is supported by national mineral leasing policies, and the regulations by which they are enforced 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. Also see response to 10c above.

This Cow Creek Pod Project consists of the drilling of eight CBM wells and associated facilities on federal lands. Because this is a fairly small project, developing **meaningful** alternatives would be difficult. Because the impacts from implementing this project were minimal, and no unresolved conflicts were apparent, no other reasonable alternatives were considered

- g. *Another problem with the leases authorizing development of the Cow Creek Pod EA is that these leases were never subject to NEPA. Accordingly, when the BLM issued these leases, it made an irrevocable 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 coalbed 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 Cow Creek Pod leases conform with the direction provided in the Great Divide Resource Management Plan and its associated NEPA documents and decisions.

The BLM’s ability to limit environmental harm within the Cow Creek 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 with actions without approval by the BLM, 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. The 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 Cow Creek 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. 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 areas where 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 a smaller 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.

- i. *The cumulative impact analysis does not evaluate the impacts associated with three additional off-channel reservoirs or the three additional aquifer recharge wells that might be necessary during the Cow Creek Pod Project life. The EA states, on page 2-13, that these facilities would likely be required during the life of the project.*

The paragraph you describe on page 2-13 of the EA clearly states facilities would not be developed during the life of the interim project. This is an exploratory project allowed under the interim drilling program. At this time it is unclear whether full-field development is feasible or what that development might look like. Text on page 2-13 of the EA states that impacts associated with further development will be analyzed in the full-field development EIS.

- j. *Why was reinjection of produced water not considered for this location? Reinjection, if feasible, is likely to do a better job of protecting other values. If reinjection was considered, why was it rejected in favor of surface disposal of produced water.*

The Cow Creek Pod was the one exception to the requirement in the IDP to reinject produced waters from CBM wells operated within the Colorado River Basin System. Water discharge to the surface had occurred for several years through a casing leak in an existing gas well. Double Eagle subsequently recompleted this well in a coal zone and applied for a National Pollutant Discharge Elimination System (NPDES) permit. It was WDEQ/WQD's determination that permitting the recompleted well for water production up to the amount which had existed was appropriate. The BLM agreed that, if Double Eagle was able to obtain an approved NPDES permit, an exception to the requirement would be allowed in this one case.

The reason for limiting surface water discharge in this basin was to avoid significant impacts that could result from exceeding the limit of 350 tons of salt per year, per operator, adopted by the Colorado River Basin Salinity Forum and state requirements. As stated in the approved NPDES permit for this project, "The State of Wyoming will cooperate with the other states of the Colorado River Salinity Control Forum and the government of the United States to maintain salinity levels in the main stem of the Colorado River." The operators do have the option to explore alternative methods of water disposal when the interim projects are located within the Great Divide and North Platte River Basins.

Alternative water disposal methods will also be explored in this project, including aquifer recharge wells.

- k. *Long-term CBM well water production data within the project area is not available. The EA, on page 4-33, acknowledges that production rates of methane and produced water cannot accurately be predicted and that these variables could affect the project. The EA assumes a 11,500 gpd discharge but does not analyze the effects or storage requirements for any other discharge rate. Given the admitted uncertainty about discharge rate, it is incumbent on the BLM to consider a variety of scenarios.*

The rate of discharge within the project area was actually estimated to be 42,000 gallons per well per day (1,000 barrels per day). The storage requirements for this amount of discharge were analyzed by the WDEQ/WQD as part of the NPDES permit. This is the

reason for the description of additional storage requirements seen on page 2-13 of the EA. However, since that time, Double Eagle has been producing water from its previously-approved wells, and the six wells are producing amounts of water far below the estimated amount. Records on the Wyoming Oil and Gas Conservation Commission site show water production for six producing wells between November 2001 and March 2002 totals 8,895 barrels of water produced. This is far below the projected rate.

- l. Produced water will be discharged into an ephemeral drainage. This will create a perennial waterway. Over time salts from the produced water will build up along the drainage and may no longer support the plant community that existed in the ephemeral drainage.*

The analysis on page 4-9 states that the channel into which the additional produced water will be discharged is stable and supports a well developed riparian vegetation community as a result of years of well water discharge into this channel. However, the analysis goes on to state that, without the input of artificial flows, this would be an ephemeral channel, exhibiting no wetland characteristics.

- m. The EA states on page 4-6 that reservoir water loss will be to evaporation and infiltration. Over time, these bodies are likely to become salty and as water infiltrates to shallow aquifers there may be downstream impacts to ephemeral draws and perennial streams. There is no discussion of monitoring of water quality.*

Surface water quality monitoring is a requirement of the NPDES permit approved by WDEQ on June 19, 2001. The effluent limits established in this permit are protective of water quality standards for Class 2 and 3 waters and are calculated as 20 percent of the water quality standard. The permit sets out very specific monitoring standards. The permit states, "Monitoring will be required for flow volume, total alkalinity, calcium, magnesium, sodium, potassium, bicarbonate, fluoride, chloride, sulfate, sodium adsorption ratio and specific conductance monthly at the outfall and the POC, during the irrigation months of April, May, June, and July." This NPDES permits is considered public information and is available from WDEQ.

- n. As reserve pits evolve into wetlands, they are likely to prove attractive to waterfowl and to shorebirds for nesting and nursery areas, but as water evaporates the water left will become increasingly saline and eventually become unsuitable and even toxic to bird life.*

The COAs attached to the Master Surface Use Plan (Appendix D) state, "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 open 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."

- o. The EA, on page 3-24, states there were no mountain plovers located in the project area during a survey of the prairie dog colony in May 2001. Will there be continued monitoring for mountain plover throughout the life of the project? Habitat conditions within the prairie dog colony can change and breeding locations of grassland birds change between years. The EA does not present an assessment of the cumulative impacts of roads on mountain plovers. Roads are identified as a risk factor in the Proposed Rule to list the mountain plover as threatened under the Endangered Species Act. Plovers both 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. The BLM has surveyed these routes for these birds during the past two years and no plover 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.

Little data exists on the cumulative impacts that roads may have on mountain plovers, but the nature of their nesting habits suggest that roads will have impacts to the 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.

- p. No raptor nests were found during breeding season surveys in 2001. Will surveys occur through the lifetime of the project? Well site facilities for productive wells will be in-place up to 15 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 the BLM in the Atlantic Rim project area for the past two years. 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 those for raptor surveys.

- q. The prairie dog colonies provide habitat for burrowing owls, yet no clearance was made for this species. Nor was there a clearance for Wyoming pocket gopher, which may also be present in the Cow Creek Pod area. The EA concludes that neither species will be impacted because the area of disturbance is small. There is no discussion of the cumulative impact on these sensitive species in relation to the development of all nine exploratory pods or the Atlantic Rim project.*

Wyoming pocket gophers are found in meadows with loose soil. The type of vegetation in the Cow Creek Pod area 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 do have the potential to occur within the project area; however,

during prairie dog mapping, no burrowing owls were observed. The BLM raptor timing stipulations would also protect areas where burrowing owls are observed. Because no potential habitat for the Wyoming pocket gopher exists in the CCPA, development of this project will not contribute to cumulative impacts to this specie. Implementation of the project has the potential to impact burrowing owls but, because implementation of protective measures identified in Chapter 2, 4.7.1.1.4. the IDP, Appendix C and COAs in Appendix D of this Decision Record, only minimal cumulative impacts to raptors are anticipated.

- r. *Increased traffic on access roads will result in dust. Page 2-19 of the EA states that dust abatement may be by use of water (but does not specify the source of the water), chemical dust suppressants, or other measures. There is no discussion of the effect of chemical runoff to verge vegetation if chemical suppressants are used.*

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 the 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.

- s. *Fragmentation of sagebrush steppe habitat 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 connecting the nine pods to such species. Moreover, if the pods are connected, there will be greater likelihood that after the CBM project ends, ORV enthusiasts, hunters, and other recreational users will use these roads. The potential impact on sagebrush obligate species from public use after the project 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 (20.2 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 average levels of use after the project is completed.

Transportation planning will be an integral part of the development of the Atlantic Rim project, and also as a means of looking at access into pod areas. Currently, not all, but 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.

- t. *The project area includes crucial pronghorn winter range. In western Wyoming it has been found that oil field development caused game animals to abandon portions of the winter range. However, 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 in the Cow Creek Pod EA concludes pronghorn acclimated to increased traffic volumes and machinery as long as the traffic moved in predictable manner.

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 to 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 states, 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 Cow Creek Pod, these are described as Conditions of Approval (COAs) included as part of this Decision Record. 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 stipulation 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, the crucial winter range stipulation 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, etc.) would be allowed to use the area. Also see 10z below.

- u. *The 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 invasion and establishment. There is also a high potential for weeds to be introduced by construction equipment and by gravel used for roadbeds. There is a discussion of monitoring for and treating weeds in the construction area, but no discussion of monitoring the prairie dog colonies as well.*

The subject of weed invasion and establishment is addressed in several places in the EA. Page 4-8 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 ROWs 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." The analysis on this page concludes that 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.

- v. *The plan for revegetation does not include replacement of lost sagebrush. On page 4-11 of the EA, it states that there will be long-term loss of sage habitats but does not address the effect of loss of sagebrush on sage dependent species such as sage sparrow or Brewer's sparrow.*

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, their inherent mobility, and the availability of suitable habitats on undisturbed land, the effects on these species should be minimal."

- w. *The EA concludes that the environmental consequences of developing the Cow Creek Pod will not be consequential. The EA acknowledges that there will be displacement impacts on wildlife but that these will be minimal so long as mitigation measures contained in the RMP, the EA, and the IDP are implemented. However, for ungulates and raptors, the wildlife stipulations apply only during exploration and development, even though the harmful effects on wildlife would continue into production phase.*

See response to 10t above.

- x. *The EA states on page 4-13 that there will likely be an increase in number of collisions with big game during the construction phase and predicts that these would decrease during production. The EA states that the BLM would recommend that the operator establish speed limits within the project area. Why not stipulate speed limits? This can help limit collisions. The EA does not take into consideration the increased recreational use of the area that is likely to occur with more roads. The EA also states that big game species will habituate to traffic, provided that it moves in a predictable manner. However, because the project area is open to public use, traffic is likely to be unpredictable both as to type and timing.*

Although construction of new and upgrading of existing roads may be done with an anticipated vehicle speed, it would generally be the operators' responsibility to inform employees of expected safe speed limits on roads in the project area. This could be implemented as part of a company's safety program. It would not be the BLM's intent, or responsibility, to police company personnel to determine if they are using appropriate speed limits for road conditions. Only under special circumstances (e.g., a tight or dangerous curve) would the BLM require the placement of speed limit signs on public lands.

Because recreational use already exists in the area, the analysis has to examine whether project components would increase the impacts to resources in the area. During the 6 to 12 months in which exploratory operations are developed, it is anticipated that some impacts to big game animals will occur, but over the long-term these impacts are anticipated to be minimal. Because no new through roads will be constructed as a component of this project, increased recreational use from additional roads is not anticipated. Please see response to 1c and 10t above.

- y. *Page 3-20 of the EA states the proposed development is not expected to significantly impact common species found in the project area and, therefore, not considered in the EA. However, this does not consider the cumulative impacts of similar impacts in all nine of the exploratory pods, nor does it consider the impacts from the Atlantic Rim project. Fragmentation of prairie habitat has been found to cause local declines in common native species.*

On page 4-35 of the EA, the analysis states that the disturbance from the implementation of the interim drilling program would reduce habitat availability and effectiveness in the cumulative impact assessment area for a variety of common mammals, birds, and their predators. Initial phase of surface disturbance is anticipated to result in some direct mortality to small mammals, some displacement of songbirds along with a slight increase in mortality from increased vehicle use. However the analysis concludes that, "Due to the relatively high production potential of these species and the relatively small amount of habitat disturbed (0.006% of the Atlantic Rim project area), small mammal and songbird populations would quickly rebound to pre-disturbance levels following reclamation, and no long-term impacts to these populations are expected."

- z. *The EA asserts that impacts to wildlife resulting from cumulative impacts of the nine exploratory pods are expected to be minimal. The EA relies on mitigation measures outlined in Chapter 2 of the EA and contained in the IDP to minimize the effect on development of the nine pods. These measures, however, do not extend for the life of the project, nor do they include monitoring. There is no discussion of the cumulative impacts of these nine pods and the development of the Atlantic Rim project, a reasonably foreseeable impact. The combined effects of habitat conversion, displacement due to the effect of roads and traffic, and habitat fragmentation resulting from construction of infrastructure for CBM extraction is very likely to have long-term cumulative impacts by affecting abundance, distribution, community interactions, and community composition (species richness). Roads fragment habitats, increasing the edge effect which can provide heterogeneity to the habitat in terms of food and cover resources. However, many native, nongame species require contiguous, undisturbed habitat. In addition, rare endemic species may suffer from creation of unnaturally high amounts of edge. Degradation of habitat either through loss of quality or quantity has been shown to negatively impact species. Stipulations to protect the surface of the leased lands may not deny all drilling due to environmental concerns. At the same time, the Secretary of the Interior is not obligated to approve all drilling if the cumulative effects are clearly environmentally detrimental to the surface of the leased lands.*

It is incorrect to assume that mitigation measures do not extend for the life of the project. All applicable federal, state, and local laws, regulations, mitigation described in the RMP, Chapters 2 and 4 of the EA, and COAs in Appendix D of this Decision Record will be applied as necessary throughout the life-of-the-project. An operator will be allowed to perform routine maintenance and monitoring in much the same way as the general public

(ranchers, recreationists, hunters, etc.) would use the area throughout the year. However, no activities will be allowed which could be potentially disruptive to wintering or nesting wildlife as described in Appendix D, without granting of an exception. Also see response to 10w above.

The discussion of cumulative impacts anticipated to result from the incremental impacts of the Proposed Action when added to past, present, and reasonably foreseeable development begins on page 4-30 of the document. On that page it states, "The only major resource development currently proposed near the project area is the exploration activity allowed under the Interim Drilling Policy for the Atlantic Rim Coalbed Methane area." The Atlantic Rim proposal is not included in the cumulative impact discussion because it is not reasonably foreseeable. Please refer to response 10h above. The cumulative impact discussion presented on page 4-30, quantifies potential disturbance likely to occur from exploration drilling (650 acres, which includes 60 miles of new access road) as well as disturbance from past activities.

In the future, should development in the Atlantic Rim Project Area (ARPA) prove to be feasible, the effects on wildlife will be assessed in the EIS completed for the project. Baseline wildlife data continues to be gathered in pod areas and the larger ARPA. Included with the EIS, a Wildlife Mitigation and Monitoring Plan will be prepared, much like that developed for the CD/WII project.

The IDP was developed to establish conditions and criteria to keep all interim activity at an insignificant and reasonable level. The analysis presented in the EA does not indicate that the Proposed Action described for the development of the Cow Creek Pod, when added to those of past, present, and reasonably foreseeable development, will result in environmentally-detrimental cumulative effects that you describe.

APPENDIX C

PROJECT-WIDE MITIGATION MEASURES AND PROCEDURES

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2.1.9 PROJECT-WIDE MITIGATION MEASURES AND PROCEDURES

Double Eagle proposes to implement the following mitigation measures, procedures, and management requirements on public lands to avoid or mitigate resource or other land use impacts. These mitigation measures and procedures may be applied on privately-owned surface if specified 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.

2.1.9.1 Preconstruction Planning and Design Measures

1. Double Eagle and the BLM will make on-site IDT inspections of each proposed and staked facility site (e.g., well sites), new access road, access road reconstruction, and pipeline alignment projects so that site-specific recommendations and mitigation measures can be developed.
2. New road construction and maintenance of existing roads in the CCPA and ARPA will be accomplished in accordance with BLM Manual 9113 standards unless private landowners or the State of Wyoming specify otherwise.
3. Prior to construction, Double Eagle will submit a Master Surface Use Plan (MSUP) for each pod. This plan will contain individual APDs for each drill site and Sundry Notices and/or ROW applications for pipeline and access roads. APDs submitted by Double Eagle will show the layout of the drill pad over the existing topography, dimensions of the pad, volumes and cross sections of the cut and fill (when required), location and dimensions of reserve pit(s), and access road egress and ingress. The MSUP will include itemization of project administration, time frame, and responsible parties.
4. Double Eagle 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 start of construction.

2.1.9.2 Resource-Specific Requirements

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

2.1.9.2.1 Range Resources and Other Land Uses

Mitigation requirements listed under Soils, Vegetation, and Wetlands, and Wildlife also apply to Range Resources and Other Land Uses.

1. Double Eagle will coordinate with the affected livestock operators to ensure that livestock control structures remain functional during drilling and production operations.

2.1.9.2.2 Air Quality

1. All BLM-conducted or authorized activities (including natural gas development alternatives) must comply with applicable local, state, tribal and federal air quality regulations and standards. Double Eagle 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. Double Eagle will not allow burning garbage or refuse at well locations or other facilities. Any other open burning will be conducted under the permitting provisions of Section 13 of the Wyoming Air Quality Standards and Regulations.
3. On federal land, Double Eagle 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).
4. If air quality analyses indicate exceedances in NOX, one or all of following types of control measures will be implemented: the reduction of compression requirements, electric compression or use of nonselective catalytic reduction, lean combustion, or selective catalytic reduction control technologies. Currently, these levels are below required levels and the likelihood of requiring these measures is small.

2.1.9.2.3 Transportation

1. Existing roads will be used as collectors and local roads whenever possible. Standards for road design should be consistent with BLM Road Standards Manual Section 9113.
2. Roads constructed as a part of the Cow Creek Pod project 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 will 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 reclaimed. Roads on private lands should be treated similarly depending on the desires of the land owner.
5. The Proponent 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.

2.1.9.2.4 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 the BLM and WDEQ casing and cementing policy.

Paleontological resource values will be protected through the following mitigation measure:

1. If recommended by the BLM, each proposed facility located in areas with known and potential vertebrate paleontological resource significance will be surveyed by a BLM-approved paleontologist prior to surface disturbance (USDI-BLM 1987, 1990).
2. Discovery Contingency. Contingency should 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 made and implemented recommendations regarding further mitigation.
3. Field Survey. No specific data currently exists on deposits of high and undetermined paleontologic potential in CCPA. 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 the Browns Park, Green River, and Wasatch formations are exposed. 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 and fossil material, obtaining representative samples of fossil material, by monitoring excavation, or by avoidance. In some cases no action beyond that conducted during the field survey may be necessary.

2.1.9.2.5 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, 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 to a minimum depth of six inches on all well pads.
7. Where possible, minimize disturbance to vegetated cuts and fills on existing roads that are improved.
8. Install runoff and erosion control measures such as water bars, terms, and interceptor ditches if needed.
9. Install culverts for ephemeral and intermittent drainage crossings. Design all drainage crossing structures as directed by the BLM.
10. Implement minor routing variations during access road layout to avoid steep slopes adjacent to ephemeral or intermittent drainage channels. Maintain a 100-foot wide buffer strip of natural vegetation where possible (not including wetland vegetation) between all construction activities and ephemeral and intermittent drainage 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 dissipater) 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 a vegetal cover.
12. Upon completion of construction activities, 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.

2.1.9.2.6 Water Resources

Other mitigation measures listed in the Soils and Vegetation and Wetlands sections of this EA will also apply to Water Resources.

1. Limit construction of 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, access roads, and pipelines within 500 feet of surface water and/or riparian areas. Possible exceptions to this will be granted by the BLM 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. Maintain vegetation barriers occurring between construction activities and ephemeral and intermittent channels.
6. Design and construct interception ditches, sediment traps/silt fences, water bars, and revegetation and soil stabilization measures if 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 with the same or very similar bed material replaced.
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 or compact and stabilize fill. Inspect the subsoil material of the pit to be constructed in order to assess soil stability and permeability and 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 semiclosed 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 with sufficient quantities and through 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, treat or filter the water to reduce pollutant levels or to settle out suspended particles if necessary. 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 test water with the Wyoming SEO and the BLM
14. Discharge all concentrated water flows within access road ROWs onto or through an energy dissipater 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 NPDES permit requirements. The WDEQ requires operators to obtain a field permit for fields of 20 wells or more.

16. Exercise stringent precautions against pipeline breaks and other potential accidental discharges of toxic chemicals into adjacent streams. If liquid petroleum products are stored on-site 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.

2.1.9.2.7 Fisheries

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

2.1.9.2.8 Vegetation and Wetlands

Other mitigation measures under Soils and Water Resources 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.

2.1.9.2.9 Wildlife

1. During reclamation, establish a variety of forage species that are useful to resident herbivores.
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, per BLM authorizations, within big game crucial winter range from November 15 to April 30.
4. Complete a raptor survey of the CCPA 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 one mile (depending on species and line of sight) of a proposed well site, restrict construction during the critical nesting season for that species.
7. Do not perform construction activities within 0.25 mile of existing greater sage-grouse leks at any time.
8. Provide for greater sage-grouse lek protection during the breeding, egg-laying, and incubation period (March 1-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.
9. To eliminate any hazard to migratory birds or other wildlife, the BLM will require netting (maximum two-inch mesh) be installed over any pits identified as containing oil or toxic substances.

2.1.9.2.10 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. Implement measures discussed in Chapter 4 for compliance with the Endangered Species Act (ESA).

2.1.9.2.11 Visual Resources

1. 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.
2. Utilize existing topography to screen roads, pipeline corridors, drill rigs, well heads, and production facilities from view.
3. Roads will follow contours or vegetation whenever possible to blend with the environment. Tops of facilities will be kept below ridge lines as seen from roads.

2.1.9.2.12 Noise

1. Muffle and maintain all motorized equipment according to manufacturers' specifications.
2. In any area of operations (drill site, compressor site, etc.) where noise levels may exceed federal OSHA and MSHA safe limits, Double Eagle will provide and require the use of proper personal protective equipment by employees.

2.1.9.2.13 Recreation

Measures under Wildlife, Transportation, Soils, Health and Safety, and Water Resources of this 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.

2.1.9.2.14 Socioeconomic

1. Implement hiring policies that 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. Double Eagle and its subcontractors 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.

2.1.9.2.15 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 AO.

2.1.9.2.16 Health and Safety

Measures listed under Air Quality and Water Quality 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, require measures 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 prior to transport in containers approved by the BLM
4. During construction and upon commencement of production operations, Double Eagle will have a chemical or hazardous substance inventory for all such items that may be at the site. Double Eagle 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 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. 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, if quantities exceeding 10,000 pounds or the threshold planning quantity (TPQ) are to be produced or stored in association with the Proposed Action. 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.

APPENDIX D

**MASTER SURFACE USE PLAN
INCLUDING
BLM CONDITIONS OF APPROVAL**

MASTER SURFACE USE PLAN

**June 15, 2001
Double Eagle Petroleum Company
P.O. Box 766
Casper, Wyoming 82602
(307) 237-9330
Cow Creek Area of Pod #6
Carbon County, Wyoming**

Double Eagle Petroleum Company is proposing the drilling of eight (8) exploratory coalbed methane (CBM) wells near and in the Cow Creek Unit or Pod #6 of the Interim Drilling Plan associated with the Atlantic Rim Environmental Impact Study in Carbon County, Wyoming.

The Atlantic Rim Environmental Impact Study will commence in 2001 and cover approximately 300,000 acres. The EIS is expected to take 18-24 months to complete. During the interim period before the EIS completion, the Bureau of Land Management will allow the drilling of up to 200 exploratory wells. Currently oil and gas operators have identified 9 areas or "Pods" where these exploratory wells will be located.

The Interim Drilling Plan associated with the Atlantic Rim Environmental Impact Statement allows for the drilling of 24 CBM wells, 1 aquifer recharge well and 1 disposal well in Pod #6 located in portions of Sections 12 of Township 16 North, Range 92 West and Sections 7, 17 & 18 of Township 16 North, Range 91 West, Carbon County, Wyoming. 10 CBM wells and the disposal well located in Sections 8 and 17 of Township 16 North, Range 91 West will be operated by PEDCO/Warren Resources. The remaining 14 CBM wells and 1 aquifer recharge well in Pod #6 will be operated by Double Eagle Petroleum. This Master Surface Use Plan also serves as Double Eagle's right of way application for operations proposed herein. **This Master Surface Use Plan focuses solely on the wells to be operated by Double Eagle Petroleum.**

The 14 CBM wells Double Eagle will operate in Pod #6 currently consist of 2 existing CBM wells, 4 existing and approved Permits to Drill, and 8 proposed locations. Of this total 14 wells/locations, 9 will be within the Cow Creek Federal Unit on federal leases C-07345B and C-075345A and WYW-48862. The remaining 5 proposed wells will be on federal lease #WYW-131275.

For purposes of this Master Surface Use Plan, Double Eagle has combined the surface use methods employed in its 2 existing CBM wells and 4 approved CBM locations with the proposed eight (8) new CBM locations and aquifer recharge well. This Master Surface Use Plan is not intended to modify the surface uses approved for its existing wells or locations, rather it is to compliment and coordinate the two plans. A topographic map showing the wells, approved APDs, proposed locations, access routes and pipelines is attached to this Plan as Exhibit "A".

Following is a list of the CBM wells and aquifer recharge well located within Pod #6 for which Double Eagle will operate:

Decision Record and FONSI - Atlantic Rim Coalbed Methane Project - Cow Creek Pod

<u>Well Name</u>	<u>Location</u>	<u>Lease</u>	<u>Status</u>
CCU #1X-12	NW¼SE¼ (12, T16N-R92W)	C-075345B	Producing
CCU #34-12	SW¼SE¼ (12, T16N-R92W)	C-075345A	Shut-in
CCU #32-12	SW¼NE¼ (12, T16N-R92W)	C-075345A	Approved APD
CCU #42-12	SE¼NE¼ (12, T16N-R92W)	C-075345A	Approved APD
CCU #43-12	NE¼SE¼ (12, T16N-R92W)	C-075345A	Approved APD
CCU #44-12	SE¼SE¼ (12, T16N-R92W)	C-075345A	Approved APD
CCU #12-7	Lot 6 (SW¼NW¼) (7, T16N-R91W)	W-48862	Application
CCU #13-7	Lot 7 (NW¼SW¼) (7, T16N-R91W)	W-48862	Application
CCU #14-7	Lot 8 (SW¼SW¼) (7, T16N-R91W)	W-48862	Application
DBLE #24-7	SE¼SW¼ (7, T16N-R91W)	W-131275	Application
DBLE #33-7	NW¼SE¼ (7, T16N-R91W)	W-131275	Application
DBLE #34-7	SW¼SE¼ (7, T16N-R91W)	W-131275	Application
DBLE #43-7	NE¼SE¼ (7, T16N-R91W)	W-131275	Application
DBLE #44-7	SE¼SE¼ (7, T16N-R91W)	W-131275	Application
ARW #1	SE¼NW¼ (12, T16N-R92W)	C-075345A	Application

The wells operated by Double Eagle are located on federal oil and gas leases C-07345B, C-075345A, W-8862 and W-131275. Lease WYW-131275 has a time stipulation from February 1st to July 31st for sage grouse and raptor nesting. All locations are covered within the area of wildlife analysis completed by Hayden-Wing and Associates for PEDCO/Warren Resources in Spring 2001. From that study, the only wildlife concern in the immediate area are a 2-mile buffer from a sage grouse lek and prairie dog town. The sage grouse lek will be addressed with a timing stipulation and the prairie dog town was addressed by moving locations and access routes a sufficient distance from the site. Block cultural surveys have been conducted on each location and applicable right-of-ways. All of these concerns identified by these studies can be easily be addressed without mitigation while staking the locations.

The drilling of the above locations will determine whether coalbed methane gas production is possible and economic. The coal seams targeted in the Cow Creek Area and Pod #6 will be the Mesaverde formation coals. Drilling locations are spaced on 40 acre spacing. This spacing is viewed by Double Eagle initially as the most warranted spacing since this area has only one (1) producing CBM well and therefore no reliable reservoir data exists to date. BLM's Reservoir Management Group identified The Cow Creek Pod or Pod #6 as having the only well testing coalbed methane in the proposed EIS area and "having the best economic coalbed methane potential due to its structural location".

These comments and others lead BLM to specify this area as the only one which would be allowed to discharge production water onto the surface. This discharge would be under a National Pollution Discharge Elimination System (NPDES) permit issue by the Wyoming Department of Environmental Quality (DEQ). Double Eagle is currently applying for a NPDES permit from the Wyoming Department of Environmental Quality which is designed to not increase impacts to the drainage basin and to explore alternative methods of containment and disposal of produced water. The NPDES permit will be discussed further in this Plan and is attached to the Water Management Plan which accompanies the APDs for each well.

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 connection or for authorization from the Wyoming DEQ for temporary or permanent surface water discharge permits and/or approval of sundry notices by the BLM for production activities and facilities.

All gas production and water production from Double Eagle operated wells will flow in underground pipelines to a Central Delivery Point (CDP) facility. The CDP will be located at the CCU #1X-12 wellsite in the NW¼SE¼ of Section 12, Township 16 North, Range 92 West. Once gas production enters the CDP it will be metered, compressed and sold into an existing third party gas sales lying beneath the CDP. Production water will enter the CDP and flow into an existing settling pond. From the pond, the water will be addressed in several ways as defined and approved by the Wyoming DEQ under the NPDES permit.

1. Existing Roads

Access to the Cow Creek Area wellsites is obtained by road traveling approximately 38 miles South of Creston Junction, Wyoming. From the intersection of Interstate 80 and Highway 789 (Creston Junction Exit), proceed south toward Baggs, Wyoming on Highway 789 for approximately 31 miles to Dad, Wyoming. Turn left (east) at Dad and follow the main road for approximately 3 miles where the road forks. Take the left fork and continue on for 2 miles to the Cow Creek 1X-12 wellsite and Battery. This site will become the Central Delivery Point (CDP) of all Double Eagle wells discussed under the Master Surface Use Plan. For further reference, please see the area and topographic maps in the individual well Application for Permit to Drill (APDs) for the location of each well, access route and location of nearby roads.

The existing roads are shown on an enclosed map. Existing roads will be maintained in as good or better condition than they now exist. All equipment and vehicles will be confined to these travel corridors and other areas specified in the plan of development.

2. Proposed Access Roads to be Constructed

- A. No new main roads will be needed to access wells in this program as existing two-track roads are already present and will represent the main corridors for access to the wellsites. However, new ancillary roads branching off these main roads to each location for access and utility trenches will require construction and are discussed later in the Plan. Each roadway access route will be 16 feet in width and be a dirt road which is crowned and ditched following the general terrain. Drainage crossings on the access routes will be constructed as low water crossings or with installation of culverts. Low water crossings will be employed in gentle sloping terrain as opposed to culverts which will be used in steeper terrain. Drainage structures will be designed to pass all naturally occurring mean flows.
- B. After wells are completed and equipment is installed, travel to wells will normally be limited to one visit per day. A light truck or utility vehicle will be used to check on operations, read meters, and provide light service during the life of the project. The integrity of all discharge facilities would be checked during these wellsite visits in addition to monitoring compliance with the NPDES permit, and ensure that all discharges occur only as planned and authorized. Well service trips could be rescheduled or postponed during periods of wet weather when vehicle travel could cause rutting.
- C. If wells are productive, the portions of access routes that provide access to the CDP facility will be upgraded to an all weather road to provide year around service. Road up-grading will consist of graveling the road way with scoria material that is acceptable to the surface owner. Culverts and other road drainage control structures will be installed at specific locations as specified by the landowner.
- D. All equipment and vehicles will be confined to these travel corridors and other areas specified in the plan of development.

3. Location of Existing Wells

All existing wells or locations known within one mile of the proposed Double Eagle locations are shown on the area and topographic maps in the individual well Application for Permit to Drill (APDs) for the location of each well.

- A. Water Wells: One, Non Producing
- B. Abandoned Wells: Eleven
- C. Temporarily Abandoned Wells: None
- D. Disposal Wells: None
- E. Drilling Wells: None
- F. Producing Wells: Two
- G. Completing Wells: None
- H. Shut In Wells: Three
- I. Injection Wells: None
- J. Monitoring or Observation Wells: None
- K. Proposed or Permitted Wells: 25

4. Existing and/or Proposed Facilities if Well is Successful

- A. There are no existing facilities on the wellsite locations.
- B. A graded wellpad with the dimensions of 180 feet by 200 feet will be constructed at the wellsite. A portion of these areas will be reclaimed and reseeded after drilling and completion operations are completed. All areas will be reclaimed and reseeded after operations are completed
- C. During operations, surface facilities at the wellsite will consist of a wellhead and insulated wellhead cover in an area approximately 10 feet by 10 feet. An area with the dimensions of 100 feet by 100 feet will not be reclaimed as such is needed for servicing the well. Each wellbore will have a pump installed to pump water from the coal formation thereby allowing for the release and production of natural gas. Exposed surface facilities will be painted Carlsbad Cavern colors approved by BLM.
- D. Two buried pipelines and one buried power cable, each appropriate in length to travel the distance from each wellsite on the defined access routes to the CDP will be installed between the well location and the CDP as shown on the enclosed map. The pipelines and power cable will be installed in the same trench. Each trench will 4 feet deep to prevent freezing of pipelines. The pipelines will be constructed of HDPE or steel pipe. One pipeline will transport the produced water and the other will transport the gas. A backhoe or small trencher will be utilized to dig the trench(s) thus, surface disturbance will be minimized.

5. Location and Type of Water Supply

Water for drilling, completing and dust control of the proposed wells will be obtained from the settling pond at the CDP located in the NW¼SE¼ of Section 12, T16N, R92W. The water in the settling pond is production water from the CCU #1X-12 well. Water will be hauled by truck to the well locations over existing roads. Water volumes used in the operations is dependent upon the depth of the well and the losses that might occur during the operation.

6. Construction Materials

No construction material will be needed for drilling purposes. There are no plans to use any federally owned material, but should that become necessary, the required approvals will be obtained prior to use. Construction and drilling activity will not be conducted using frozen or saturated soil material or during periods when watershed damage or excessive rutting is likely to occur. If production is established, gravel will be purchased from a local supplier and the material will be spread on the roadway for it to maintain all weather travel to the CDP facility.

7. Methods of Handling Waste Disposal

- A. All wastes that accumulate during the drilling operations will be contained in a trash cage that is fenced and completely enclosed with a fine wire mesh, and will be removed from the location and deposited in an approved sanitary landfill. Immediately after removal of the drilling rig, all garbage and debris on the site will be removed from the site. The reserve pit will not be utilized for trash disposal. All state laws and regulations pertaining to containment and disposal of human waste will be complied with.
- B. Double Eagle and its contractors shall ensure that all use, production, storage, transport, and disposal of hazardous and extremely hazardous materials associated with the drilling, completion and production of wells, and project operations will be in accordance with all applicable existing or hereafter promulgated federal, state and local government rules, regulations and guidelines.
- C. For the protection of livestock and wildlife, all pits will be fenced "stock tight" and any pits containing toxic liquids will be netted with 2" mesh netting.
- D. Cuttings and drilling fluids shall be put in the reserve pit during drilling. A wire fence will be installed around the pit during drilling and after the drilling rig leaves. There will be no oil, salt water or other noxious fluids produced during drilling and completion operations.

8. Ancillary Facilities

It is anticipated that there will be a maximum of three (3) trailers on location during drilling and completion operations. Upon conclusion of the operations, the trailers or other facilities will be removed from the site.

9. Wellsite Layout

- A. Please refer to the diagrams attached to the individual APDs or the Master Drilling Plan that shows each drill pad orientation with cuts and fills. Location dimensions are surveyed as 200' by 180' maximum area. However, the amount of area actually used for the drillsite will be dependent on the drilling rig used. The only grading of the wellsite will be the part of the location where the drilling rig and ancillary facilities are positioned. Within the location

dimension, a temporary pit will be excavated measuring 15 feet wide and 15 feet long and 12 feet deep. The estimated life of the pit will be 2-3 weeks to allow for evaporation of pit fluids and will be reclaimed after completion operations. The pit will be fenced "stock tight" to prohibit livestock and wildlife from falling into it.

- B. Where grading occurs, the top 6 inches of soil material will be removed from the location, including areas of cuts, fill and subsoil storage areas, and will be stockpiled at the site. If ground frost prevents the segregation and removal of the topsoil material from the less desirable subsoil material, cross-ripping to the depth of the topsoil material will be completed as necessary.
- C. Care will be exercised to make certain that soil material and overburden will not be pushed over side-slopes or into drainages. All soil material disturbed will be placed in an area where it can be retrieved.
- D. If there is snow on the ground when construction begins, it will be removed before the soil is disturbed, and it will be piled downhill from the topsoil stockpile location.
- E. The backslope and foreslope will be constructed no steeper than 1.5:1. The reserve pit will be constructed with a minimum of one-half ($\frac{1}{2}$) the total depth below the original ground surface on the lowest point within the pit.
- F. The reserve pit will be fenced stock-tight on all sides when the well is suspended, completed or abandoned.
- G. The reserve pit will be oriented to prevent collection of surface runoff. The pad will be constructed in such a manner as to prevent water from draining across the pad.
- H. Block cultural surveys have been conducted on all locations and utility right-of-way corridors and have identified no negative impact from the proposed operations. However, if in connection with construction operations, the lessee/operator, his contractors, subcontractors, or the employees of any of them discover, encounter or become aware of any objects or sites of cultural value on the affected area, such as historical or prehistorical ruins, graves or grave markers, fossils, or artifacts, the lessee/operator shall immediately suspend all operations in the vicinity of the cultural value and notify the BLM Authorized Officer of the findings. Operations may resume at the discovery site upon receipt of written instruction and authorizations by the Authorized Officer, Bureau of Land Management.

10. Plans For Reclamation of the Surface

- A. Reclamation procedures whether the well is completed as a successful production well or as a dry hole:
 - 1) Rat and mouse holes if present will be filled immediately upon release of the drilling rig from the location.
 - 2) All garbage, trash and debris will be removed and properly disposed of in accordance with paragraph number 7 of this Plan entitled Methods of Handling Waste Disposal.

- 3) The liquid contents of the reserve pit may be hauled to the next well to be immediately drilled or will be allowed to dry before backfilling, or pit fluids will be removed and disposed of in a manner approved by the Authorized Officer of the BLM before the reserve pit is backfilled.
- 4) All rehabilitation work, including seeding, will be completed within one(1) year of completion of the operation. The areas not needed for production purposes will be recontoured, top soil respread and seeded utilizing the seed mixture provided by the surface management agency.
- 5) All pits will be closed within 90 days after completion of operations or when the pit has dried out sufficiently to permit reclamation, but no case longer than one year after completion of operations without an extension approved by BLM.

B. Additional reclamation procedures if the well is completed as a dry hole:

- 1) A Notice of Intent to Abandon and Subsequent Report of Abandonment will be submitted to BLM for approval. A Final Abandonment Notice will be submitted when the rehabilitation is complete and the new vegetation is established.
- 2) An above-ground tubular metal dry-hole marker will be erected over the drill-hole location upon cessation of drilling and/or testing operations. The marker will be inscribed with the operator's name, well number, well location (¼ ¼, section, township, range, etc.) and federal lease number. Upon request of the surface management agency, the casing may be cut-off-three (3) feet below reclaimed ground surface (or below plow depth) with a metal plate affixed to the top providing the same well information as stated above. This monument will consist of a piece of pipe not less than four inches in diameter and ten feet in length, of which four feet shall be above the general ground level and the remainder being imbedded in cement. The top of the pipe will be closed by a welded or screw cap, cement or other means.
- 3) All disturbed areas will be restored as nearly as possible to resemble the surrounding terrain. Topsoil will be respread and reseeding will be done according to the directions of the surface management agency. Care will be taken to prevent erosion.

C. Additional reclamation procedures if the well is completed as a producing well:

- 1) Those disturbed areas not required for production operations will be recontoured to resemble surrounding terrain. No depressions will be left that trap water or form ponds.
- 2) The backslope and foreslope will be reduced to 2.5:1 by pulling fill material up from the foreslope and placing it into the toe of cut slopes.
- 3) If warranted, water bars at least one (1) foot deep will be constructed on the contour with approximately two (2) feet of drop per 100 feet of water bar to ensure drainage, and will be extended into established vegetation. All water bars will be constructed with a berm on the downhill side to prevent the soft material from silting in the trench. Water bar spacing on the location will be midway between the top and bottom of the backslope, and midway between the top and bottom of the foreslope.

- 4) Topsoil will be distributed evenly over those areas not required for production, and will be reseeded as recommended by the surface management agency.
- 5) To maintain quality and purity, certified seed with a minimum germination rate of 80% and a minimum purity of 90% will be used, in a mix directed by the surface management agency.

11. Surface Ownership

The surface estate of the access roads, drillsites and pipeline routes covered by this Plan are managed by the BLM.

12. Other Information

An Environmental Assessment (EA) of the area covered by this Master Surface Plan is being prepared by Mr. Gary Holsan, P. O. Box 275, Thayne, Wyoming 83127. Once the document is completed it will be forwarded to BLM's office in Rawlins, Wyoming.

An in depth wildlife analysis has been conducted by Hayden-Wing Associates, P.O. Box 1689, Laramie, Wyoming 82073 in conjunction with the Atlantic Rim Environmental Impact Study. BLM has received a copy of this analysis.

All drillsite locations have been surveyed by a registered professional land surveyor.

Block cultural surveys for each quarter-quarter section where a wellsite, access road or pipeline route is located have been conducted by a BLM approved archeologist and is on file with BLM who will forward a copy of same to the State Historical Preservation Office (SHPO).

A Water Management Plan is attached to the Master Surface Use Plan that addresses how produced water will be handled during the testing and production of the CBM wells.

General factors on the area are described as follows:

- A. Topography – The wellsites located on generally flat terrain broken by small drainages. One (1) wellsite is situated on an abandoned wellsite. The main wellsite access route and one ancillary road are existing two-track roads.
- B. Soils – Soils in the area are sandy loam.
- C. Wildlife – Species present in the area include mule deer, antelope, rabbits, coyotes, fox, badgers, rodents and various birds.
- D. Vegetation – Species occurring within the area include mixed short grasses, low sagebrush, prickly pear cactus, phlox and creosote bush.
- E. Closest Residence – The closest residence to the proposed wellsite is approximately 4.6 miles to the southwest.
- F. Land use – The primary use of the subject land is livestock grazing and mineral production.

13. Lessee or Operator's Certification

Double Eagle Petroleum Company, hereby certifies that said company is authorized to conduct operations on the above described land under the terms and conditions of Federal Oil And Gas Leases C-075345A, C-075345B, W-48862, WYW-131275 and Unit W-109471X. Bond coverage pursuant to 43 CFR 3104 is provided by Double Eagle Petroleum Company. The applicable bond number is on file in the Wyoming State Office, BLM Bond No. WY3224, a statewide oil and gas lease bond in the amount of \$25,000.00.

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsites and access routes; that I am familiar with the conditions which presently 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 Double Eagle Petroleum Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

Double Eagle Petroleum Company

Name: _____
Stephen H. Hollis, President

Date: _____

Cow Creek Unit POD No. 6
Conditions of Approval for Applications for Permit to Drill

The following Conditions of Approval are *in addition* to the General Permitting Requirements and all mitigation measures outlined in the Master Surface Use Plan

<u>Well Name and No.</u>	<u>Federal Lease No.</u>	<u>Location</u>
Cow Creek Unit #12-7	WYW-48862	T.16N., R.91W., sec. 7, SWNW
Cow Creek Unit #13-7	WYW-48862	T.16N., R.91W., sec. 7, NWSW
Cow Creek Unit #14-7	WYW-48862	T.16N., R.91W., sec. 7, SWSW
Cow Creek Unit #24-7	WYW-131275	T.16N., R.91W., sec. 7, SESW
Cow Creek Unit #33-7	WYW-131275	T.16N., R.91W., sec. 7, NWSE
Cow Creek Unit #34-7	WYW-131275	T.16N., R.91W., sec. 7, SWSE
Cow Creek Unit #43-7	WYW-131275	T.16N., R.91W., sec. 7, NESE
Cow Creek Unit #44-7	WYW-131275	T.16N., R.91W., sec. 7, SESE

SURFACE USE PLAN OF OPERATIONS

Existing Roads

1. All existing roads that are used to access the wells shall be brought up to BLM minimum standards as found in BLM Manual 9113.
2. Maintenance of existing roads used to access the well locations will continue until final abandonment and reclamation of the well locations occurs. A regular maintenance program will include, but is not limited to, blading, ditching, culvert installation, and gravel surfacing where excessive rutting may occur. Roads will not be flat bladed. Excessive rutting or other surface disturbance will be avoided. Operations will be suspended temporarily during adverse weather conditions if excessive rutting is occurring when access routes are wet, soft, or partially frozen.
3. The holder shall share maintenance costs in dollars, equipment, materials, or labor proportionate to holder's use with other authorized users. Upon request, the Authorized Officer shall be provided with copies of any maintenance agreement entered into.
4. 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 do not destroy the vegetation.

Proposed Access Roads to be Constructed

1. 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 16-foot 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 weather conditions that suggest excessive rutting or erosion may occur without gravel.

2. Access to individual well sites will be constructed to minimum standards for a BLM "resource road" as outlined in BLM Manual section 9113. The minimum travelway width of the road will be 16 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.
3. Topsoil and vegetation will be windrowed to the side of the road. After the road is crowned and ditched with a 0.03 -0.05 ft/ft crown, the topsoil will be pulled back onto the cut slopes of the road ROW so there is no berm left at the top of the cut slope.
4. Culverts will be installed on the new access roads in the drainages identified during the onsite inspection and as noted on the topographic maps in the well files. Additional culverts will be placed in the access road as the need arises or as directed by BLM's Authorized Officer.

Culverts will require 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. 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 six inches 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 riprapping or other measures as required.

5. 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.
6. Wing ditches will be constructed as the need arises or as directed by BLM's Authorized Officer to divert water from the road ditches. Wing ditches will be constructed at a slope of ½%-1%.
7. Where needed, a Double Eagle Petroleum Co. representative will conduct a "Plans in Hand" review with contractors to review the access routes to well locations. Where needed, directional markers will be temporarily placed to mark access routes. All markers will be removed as soon as they are no longer needed.
8. 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.
9. 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.
10. Unless otherwise exempted, free and unrestricted public access will be maintained on all access roads.

Existing and/ or Proposed Facilities if the Wells are Successful

- A. On the Well Pad
 1. At each drill location, surface disturbance will be kept to a minimum. The areal extent of each drill pad shall not be more than the proposed 180 feet by 200 feet unless a "change of plans Sundry Notice" is submitted along with a new Class III archaeological survey and

wildlife survey. Each drill pad will be leveled using cut and fill construction techniques where needed. If production facilities will be different in any way from Figure 2-4 of the EA, "Diagram of a Typical CBM Wellhead Configuration," a Sundry Notice shall be submitted prior to installation.

2. 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, Environmental Assessment, or individual APDs.
3. In order to minimize surface disturbance, where possible, the operator shall utilize wheel trenchers or ditch witches 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.
4. All above-ground structures, production equipment, tanks, transformers, and insulators not subject to safety requirements shall be painted to blend with the natural color of the landscape. The paint used shall be a color which simulates Standard Environmental Colors. The color selected is Carlsbad Canyon (2.5Y 6/2).

B. Off the Well Pad

1. The compressor site will consist of an insulated header building containing allocation meters for each well and a single sales meter. The header building will also contain a dehydrator that will remove water from the wet gas stream. If different production facilities are required, plans will be submitted in a Sundry Notice, prior to installation.
2. All tanks and pits will be constructed, maintained, and operated to prevent unauthorized surface or subsurface discharges of water.
3. All tanks and pits will be fenced or capped to prevent livestock or wildlife entry.
4. All tanks and pits 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 and Wyoming DEQ. Any discharge from the tanks or pits will be reported to the BLM as required by NTL-3A.
5. 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 ground water, surface water, or navigable waters before cleanup is completed.
6. Within 90 days of initial production start-up, the operator will submit to the BLM Authorized Officer an analysis of the produced water.
7. Utility trenches and pipelines will be aligned to follow alongside the access roads wherever possible, as previously agreed.

Location and Type of Water Supply

1. Any changes in the water source used to drill the wells, or the method of transportation must have written approval from the BLM's Authorized Officer before the changes take place.

Methods for Handling Waste Disposal

1. Double Eagle will comply with all state and local laws and regulations pertaining to the disposal of human and solid wastes.
2. The reserve pit will be fenced around three sides during drilling. A sheep-tight woven wire would be used on the bottom with two strands of barbed wire above it. The fourth side of the reserve pit will be fenced as soon as the rig leaves the location. The pit will be backfilled within two to three weeks following completion of drilling or when sufficient drying has occurred and topsoil replaced. Any pits containing oil or toxic liquids will be covered with two-inch mesh netting.
3. 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. Double Eagle will comply with all state and local laws and regulations pertaining to disposal of human and solid wastes.
4. Immediately after removal of the drilling rig, all debris and other waste materials not contained will be cleaned up and removed from the well location. No potentially adverse materials or substances will be left on the location.
5. Any spills, leaks, or unapproved discharges of oil, gas, salt water, or any other potentially-hazardous substances will be reported immediately to the BLM and other responsible parties, and will be mitigated immediately, as appropriate, through cleanup or removal to an approved disposal site.
6. CBM-produced or related water shall not be applied to roadways without prior written approval from the WOGCC and the BLM AO.

Well Site Layout

1. All reserve pits shall be constructed in a manner which minimizes the accumulation of surface precipitation runoff into the pits. This can be accomplished by appropriate placement of subsoil/topsoil storage areas and/or construction of berms or ditches.
2. For the protection of livestock and wildlife, all pits and open cellars shall be fenced. Fencing shall be in accordance with BLM specifications.
3. Ditches or berms will be constructed where necessary, or as directed by BLM's Authorized Officer, around the well pads in order to divert water away from the pad.

Plans for Surface Reclamation

1. Prior to reclamation or abandonment of the well site, water disposal pit(s), and the NRCS Reservoir, a joint inspection of the disturbed area will be held. This inspection will be held to review the existing or agree to a new acceptable reclamation plan.

2. All disturbed areas will be reclaimed by replacing topsoil, grading, and seeding with the seed mixture designated by the BLM . Seeding would occur during the spring months after ground frost or in the fall prior to ground frost. Seed shall be applied as directed by the BLM, either drilled, broadcast, or a combination thereof. Mulching may be required to insure seedling establishment.
3. The seed mix will be planted with a drill equipped with a depth regulator. The seed mix will be uniformly planted over the disturbed areas. Where drilling is not possible, seed will be broadcast and the area will be raked or chained to cover the seed. Seeding will be repeated until a satisfactory stand is established as determined by the BLM's Authorized Officer.

The following seed mixture will be used:

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

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

** Pure Live Seed

4. When dry, the reserve pit liners (if any) will be cut off as near to the mud surface as possible and hauled to the nearest landfill prior to backfilling the pit with a minimum of five feet of soil material.
5. Upon plugging and abandonment of the well location(s), fencing of the reseeded well site(s) may be required to exclude grazing and to help vegetation success, as determined by the BLM's Authorized Officer.
6. In the event of a dry hole, all equipment and debris will be removed from the location. Any improvements to the access road, such as culverts and gravel, will be removed. The drainages will be restored to their approximate original bank configuration and depth. Topsoil will be replaced over all cut areas. All disturbed areas will be seeded as indicated above.
7. The plugged and abandoned well(s) will be identified with a marker no more than four feet tall.

Reclamation of Water Disposal Pit(s) and Reservoir(s)

1. In accordance with 43 CFR 3162.5-1 *Environmental Regulations*:

The operator shall exercise due care and diligence to assure that lease-hold operations do not result in undue damage to surface or subsurface resources or surface improvements. All produced water must be disposed of by injection into the subsurface, by approved pits, or by other methods which have been approved by the BLM's Authorized Officer and Wyoming DEQ. **Upon the**

conclusion of operations, the operator shall reclaim the disturbed surface in a manner approved or reasonably prescribed by the Authorized Officer.

Additionally, per Onshore Order No. 7, “**prior to pit abandonment, a reclamation plan must be submitted. If at that time, precipitated or collected solids are a problem, the Authorized Officer will require them to be disposed of properly.**”

2. The Little Snake River Conservation District Reservoir (a.k.a. NRCS Reservoir; Compressor Reservoir) and the drainage which feeds it are directly downstream from the discharge point and are ultimately the collection point for any precipitates and collected solids discharged by these wells. It will be the sole responsibility of Double Eagle Petroleum to properly mitigate, remediate, and recontour any portion of the drainage and reservoir impoundment which are damaged, contaminated, or altered as a direct result of discharged CBM related produced water.

Other Information

1. Prior to discharging any CBM related produced water on the surface, including any temporary discharges, from the proposed wells into any drainage, any pit, or any reservoir or other impoundment, Double Eagle Petroleum will secure and maintain a valid NPDES permit or other proper authorization from the Wyoming DEQ and permits to appropriate groundwater from the Wyoming State Engineers’s Office. Furthermore, no surface discharge will occur without prior authorization of the land owner, which in this case is the BLM.
2. The well pad construction and all road construction or reconstruction on public lands will be monitored by a licensed professional engineer or a qualified individual (*not the dirt contractor*) to assure that the actual construction meets the Bureau standards as outlined in the approved APD, BLM Manual section 9113, the Surface Use Plan, and these Conditions of Approval.
3. Double Eagle Petroleum Co. will be fully responsible for the actions of its subcontractors. A copy of the APD, Surface Use Plan, and these Conditions of Approval will be on location during all construction, drilling, and completion operations. Upon request, the Authorized Officer shall be shown copies of any and all of the above-referenced documents during field compliance inspections.
4. Weeds will be controlled on disturbed areas within the exterior limits of the access road ROW and well pad. The control methods will be in accordance with guidelines established by the EPA, BLM, and state/local agencies.

SITE-SPECIFIC WILDLIFE AND CULTURAL RESOURCE CONDITIONS OF APPROVAL

Wildlife Stipulations

The following greater sage-grouse seasonal restriction is applicable to the wells/ facilities listed below:

Well 12-7; Well 13-7; Well 14-7; Well 24-7; Well 33-7; Well 34-7; Well 43-7; and Well 44-7

1. Construction, drilling, and other activities potentially disruptive to strutting and nesting greater sage-grouse, are prohibited during the period of March 1 to June 30 for the protection of greater sage-grouse nesting areas.
2. 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.

Aquifer Recharge Well #1

1. 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 (mule deer).
2. Construction, drilling, and other activities potentially disruptive to strutting and nesting greater sage-grouse, are prohibited during the period of March 1 to June 30 for the protection of greater sage-grouse nesting areas.

Aquifer Recharge Reservoir/ Water Disposal Pit

1. 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 (mule deer).
2. Construction, drilling, and other activities potentially disruptive to strutting and nesting greater sage-grouse, are prohibited during the period of March 1 to June 30 for the protection of greater sage-grouse nesting areas.

**** Please be advised that due to limits on the available time of qualified personnel, the unpredictability of wildlife, and future weather conditions, requests for exceptions to impending wildlife stipulations will only be considered in the event of extraordinary and unavoidable occurrences over which the company has little or no control. Additionally, wells must be spud in a time frame which would allow for reasonably normal drilling and completion of the well prior to the beginning date of wildlife protection stipulations.**

Cultural Resources Stipulations

1. Well 12-7: Standard Stip.
2. Well 13-7: Standard Stip.
3. Well 14-7: Standard Stip.
4. Well 24-7: Standard Stip.
5. Well 33-7: Standard Stip.
6. Well 34-7: Standard Stip.
7. Well 43-7: Special caution shall be taken to ensure that the access road does not deviate from the corridor surveyed.
8. Well 44-7: Standard Stip.
9. Aquifer Recharge Reservoir/ Water Disposal Pit: Standard Stip.

Acknowledgment of Certification

1. Double Eagle Petroleum Company acknowledges that they, or persons under their direct supervision, have inspected the proposed drill sites and access routes; that they are familiar with the conditions which currently exist; that the statements made in their Surface Use Plan are, to the best of their

knowledge, true and correct; and that the work associated with operations proposed herein will be performed by Double Eagle Petroleum Company and its contractors and subcontractors in conformity with their Surface Use Plan and these terms and conditions under which it may be approved. Double Eagle Petroleum Company's submitted Surface Use Plan and their acknowledgment of this statement confers acceptance of the provisions of 18 U.S.C. 1001 for the filing of a false statement.

2. Double Eagle Petroleum Company shall 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.

CONDITIONS OF APPROVAL FOR COW CREEK UNIT AQUIFER RECHARGE RESERVOIR/WATER DISPOSAL PIT

Lease Number: WYC-075345A

Date: May 22, 2002

Project Name: Cow Creek Unit Aquifer Recharge Reservoir/ Water Disposal Pit

Operator: Double Eagle Petroleum Company

Project Name/ Description: Double Eagle Petroleum Co. requests BLM approval to construct a 280' x 400' "out-of-channel water disposal pit / aquifer recharge reservoir." This pit will be used to contain CBM-produced water that exceeds allowed limits of discharge into the LSRCD Reservoir under their current NPDES Permit.

Legal Description: T. 16 N., R.92 W., NESW, sec. 12.

1. The pit shall be constructed in a manner which minimizes the accumulation of surface precipitation and runoff into the pit. This can be accomplished by appropriate placement of subsoil/topsoil storage areas and/or construction of berms or ditches.
2. A minimum of six inches of topsoil will be stripped from the location (including areas of cut, fill, and/or subsoil storage areas) and stockpiled for future reclamation.
3. For the protection of livestock and wildlife, all pits will be fenced. Fencing will be constructed according to BLM specifications. The pit will remain fenced until the pit is dry and reclamation is initiated.

Fencing Standards

Thirty-two-inch net wire shall be used with two strands of barbed wire on top (above) the net wire.

The net wire shall be no more than four inches above the ground. The first strand of barbed wire shall be about three inches above the net wire. Total height of the fence shall be at least 42 inches.

Corner posts shall be cemented and/or braced in such a manner to keep the fence tight at all times.

Standard steel, wood, or pipe posts shall be used between the corner braces. The maximum distance between any 2 posts shall be no greater than 16 feet.

All wire shall be stretched by using a stretching device before it is attached to the corner posts.

4. A **minimum of four feet of freeboard** shall be maintained within this pit at all times.

5. Pit construction shall exactly follow the size and dimensions shown in the survey titled, "proposed reservoir," which was included in the sundry submittal.
6. Absolutely no water from off-lease sources is to be disposed of within this pit prior to obtaining an approved right-of-way authorizing such use. The pit is not to be used for disposal of water from other sources without the prior written approval of this office.
7. Prior to discharging any CBM-related produced water on the surface, including any temporary discharges, from the proposed or existing wells into any drainage, pit, reservoir, or other impoundment, Double Eagle Petroleum will secure and maintain a valid NPDES permit or other proper authorization from the Wyoming DEQ and permits to appropriate groundwater from the Wyoming State Engineers's Office. Furthermore, no surface discharge will occur without prior authorization of the land owner, in this case the BLM.
8. Any changes regarding the facilities/pits used for disposal of produced water will be applied for as outlined in Onshore Oil and Gas Order No. 7, via a Sundry Notice before the changes take place.
9. Fluids containing hydrocarbons (condensate, diesel etc.) are not allowed in the pit.
10. Within 90 days of initial production start-up, the operator will submit to the BLM Authorized Officer an analysis of the produced water .
11. The operator shall have, on-site, a professional engineer or qualified inspector to serve as Compliance Coordinator. This individual will be responsible for assuring that all construction is in accordance with the submitted reservoir plans and these Conditions of Approval.
12. Double Eagle Petroleum Co. will notify the BLM Natural Resource Specialist a minimum of 72 hours prior to the start of reservoir construction.
13. In accordance with 43 CFR 3162.5-1 *Environmental Regulations*:

"The operator shall exercise due care and diligence to assure that lease-hold operations do not result in undue damage to surface or subsurface resources or surface improvements. Upon the conclusion of operations, the operator shall reclaim the disturbed surface in a manner approved or reasonably prescribed by the Authorized Officer."
14. Per Onshore Order No. 7, prior to pit abandonment, a reclamation plan must be submitted. If, at that time, precipitated or collected solids are a problem, the Authorized Officer will require them to be disposed of properly.
15. It will be the sole responsibility of Double Eagle Petroleum to properly mitigate, remediate, recontour, and otherwise repair the location of this pit. This includes removing and disposing of contaminated soil, salt, and other mineral deposits at an authorized disposal facility.
16. Within 30 days of receipt of this approved sundry notice, a site diagram showing the entire and complete proposed facility layout including this pit, all current and proposed wells, and the NRCS Reservoir will be submitted to the BLM's Authorized Officer.
17. Double Eagle shall maintain and comply with a current, approved NPDES permit and all DEQ regulations.

18. All facilities will be constructed, maintained, and operated to prevent unauthorized surface or subsurface discharges of water. Any unauthorized discharge from this facility will be reported to the BLM as required by NTL-3A.
19. Water from the subject pit shall not be spread on the roadways for dust control, etc., without obtaining prior written approval from WOGCC and the BLM AO.

WILDLIFE SEASONAL RESTRICTIONS

1. 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 (mule deer).
2. Construction, drilling, and other activities potentially disruptive to strutting and nesting greater sage-grouse, are prohibited during the period of March 1 to June 30 for the protection of greater sage-grouse nesting areas.

****Please be advised that due to limits on the available time of qualified personnel, the unpredictability of wildlife, and future weather conditions, requests for exceptions to impending wildlife stipulations will only be considered in the event of extraordinary and unavoidable occurrences over which the company has little or no control. Additionally, wells must be spud in a time frame which would allow for reasonably normal drilling and completion of the well prior to the beginning date of wildlife protection stipulations.**

APPENDIX E
MASTER DRILLING PLAN

MASTER DRILLING PLAN

Double Eagle Petroleum Company
P.O. Box 766
Casper, Wyoming 82602
(307) 237-9330

Cow Creek Area of Pod #6
Carbon County, Wyoming
June 15, 2001
Amended February 5, 2002

Double Eagle Petroleum Company is proposing the drilling of eight exploratory coalbed methane (CBM) wells near and in the Cow Creek Unit or Pod #6 of the Interim Drilling Plan associated with the Atlantic Rim Environmental Impact Study in Carbon County, Wyoming.

The Atlantic Rim Environmental Impact Study will commence in 2001 and cover approximately 300,000 acres. The EIS is expected to take 18-24 months to complete. During the interim period before the EIS completion, the Bureau of Land Management will allow the drilling of up to 200 exploratory wells. Currently oil and gas operators have identified 9 areas or "Pods" where these exploratory wells will located.

The Interim Drilling Plan associated with the Atlantic Rim Environmental Impact Statement allows for the drilling of 24 CBM wells in Pod #6 located in portions of sections 12 of Township 16 North, Range 92 West; and sections 7, 17, and 18, of Township 16 North, Range 91 West, Carbon County, Wyoming. Ten wells located in sections 8 and 17 of Township 16 North, Range 91 West, will be operated by PEDCO/Warren Resources. The remaining 14 wells in Pod #6 will be operated by Double Eagle Petroleum. Of this total 14 wells, Double Eagle has 2 existing wellbores, 4 approved permits to drill, and is proposing 8 additional locations. **This Master Drilling Plan focuses solely on those new proposed 8 locations to be operated by Double Eagle Petroleum.**

1. Wells to be covered by The Master Drilling Plan

<u>Well Name</u>	<u>Location</u>	<u>Survey</u>
CCU #12-7	Lot 6 (SW $\frac{1}{4}$ NW $\frac{1}{4}$) (7, T16N-R91W)	300 FWL/1,750 FNL
CCU #13-7	Lot 7 (NW $\frac{1}{4}$ SW $\frac{1}{4}$) (7, T16N-R91W)	500 FWL/2,400 FSL
CCU #14-7	Lot 8 (SW $\frac{1}{4}$ SW $\frac{1}{4}$) (7, T16N-R91W)	500 FWL/660 FEL
DBLE #24-7	SE $\frac{1}{4}$ SW $\frac{1}{4}$ (7, T16N-R91W)	660 FSL/1,650 FWL
DBLE #33-7	NW $\frac{1}{4}$ SE $\frac{1}{4}$ (7, T16N-R91W)	1,980 FSL/1,980 FEL
DBLE #34-7	SW $\frac{1}{4}$ SE $\frac{1}{4}$ (7, T16N-R91W)	660 FSL/1,980 FEL
DBLE #43-7	NE $\frac{1}{4}$ SE $\frac{1}{4}$ (7, T16N-R91W)	660 FEL/1,980 FSL
DBLE #44-7	SE $\frac{1}{4}$ SE $\frac{1}{4}$ (7, T16N-R91W)	600 FEL/660 FSL

2. Estimated Important Geological Markers

<u>Horizon</u>	<u>Drilling Depth</u>
Lewis Shale	Surface
Mesaverde	910'
Total Depth	1,500'

3. Estimated Depth of Anticipated Water, Oil, Gas or Minerals

<u>Formation</u>	<u>Drilling Depth</u>	<u>Remarks</u>
Mesaverde	910'	Oil, Gas or Water

4. Operator's Minimum Specifications for Pressure Control

- A. A BOP schematic of the blowout preventer equipment which will consist of 2,000 psi W.P. Double Ram, Hydraulic Preventer is enclosed. All fill, kill lines will be 2,000 psi W.P. 0-160' no pressure control; 160'-1,500' 2,000# system. Note: This well is proposed as a "Coal Bed Methane" (CBM) well. A number of CBM wells drilled in the area indicate that the maximum anticipated surface pressure will not exceed 250 psi thus the BOP will only be tested to 1,000 psi.
- B. Testing Procedures
 - 1. Ram type preventers and associated equipment shall be tested to 1,000 psi. Pressure shall be maintained for at least 10 minutes, or until requirements of test are met, whichever is longer.
 - 2. Tests will be run at the time of installation, prior to drilling out of casing shoe, whenever any seal subject to test pressure is broken, and at least every 30 days.
 - 3. All casing strings will be pressure tested to 0.22 psi/ft or 1,500 psi (whichever is greater) prior to drilling the plug after cementing. Test pressure will not exceed 70% of the minimum internal yield of the casing.
- C. Accessories to BOPs include upper and lower Kelly cock valves with handles and floor safety valve, drill string BOP.
- D. An accumulator unit will be used that has sufficient capacity to close all the equipment on the stack. The accumulator unit will be located at the master accumulator and on the rig floor. Hydraulic controls will be located at the master accumulator and on the rig floor. Manual controls (hand wheels) will also be installed on the blind and pipe rams. Refer to the enclosed exhibit for the diagram of the "Accumulator System and Hydraulic Controls."

5. Casing and Cementing Program

- A. All new casing.
- B. Surface casing: 160' of 9-5/8", 36#/ft, J-55 ST&C and cement to surface with 90 sacks of cement. Centralizers will be placed 5' off bottom of surface hole, and then one per joint. Cementing will consist of 90 sacks of Class G with 2% Calcium Chloride and ¼-lb per sack of Flowcele with a weight of 15 lbs per gallon and a yield of 1.15 cubic feet per sack.
- C. Production casing: 1,500' of 7", 23#/ft, J-55, ST&C, cemented with 225 sacks of cement. First Stage will consist of 125 sacks of Midcon 2 premium cement with a weight of 13 lbs per gallon and a yield of 2.0 cubic feet per sack. Second stage will consist of 100 sacks of Midcon 2 premium cement with a weight of 14.2 lbs per gallon and a yield of 1.59 cubic feet per sack. Anticipated top of cement is 400'.

6. Auxiliary Equipment

- A. A float will not be used.
- B. The pit will be monitored on a regular basis by a member of the drilling crew during the drilling of this well.

7. Mud Program

The mud system will consist of fresh water with appropriate weighting agents.

0' – 160' Fresh Water (8.5-8.6 lbs per gallon)
160' – TD Fresh Water with weighting agents (9.0-12.0 lb fluids as dictated by hole conditions).

Note: An adequate supply of weighting agents will be on hand for the purpose of assuring well control.

8. Testing Logging and Coring Program

- A. The primary objective in this well is the Mesaverde Formation.
- B. No Drilling Stem Tests will be run.
- C. Logging: The following electrical logs will be run:
DIL/FDC/CNL – TD to surface casing
- D. Coring: the decision to collect cores will be determined based on drilling samples.
- E. Well completion and stimulation procedures will be determined following the evaluation of drilling results and open hole logs. A "Sundry Notice" will be submitted outlining the planned completion procedure at that time.

9. Abnormal Pressures or Temperatures

- A. No abnormal temperatures have been noted or reported in wells drilled in the immediate area, nor at the depths anticipated in this well. The estimated static surface pressure is 250 psi or less. Anticipated Mesaverde Coals and Water Sands to be slightly over pressured.
- B. No H₂S is anticipated.

10. Starting Date and Duration of Operations

The anticipated starting date is approximately August 1, 2001. Each drilling and completion operation should be completed in 45 days after spudding the well.

A COPY OF THE APPLICATION FOR PERMIT TO DRILL AND THESE CONDITIONS OF APPROVAL MUST BE FURNISHED TO YOUR FIELD REPRESENTATIVE AND BE AVAILABLE ON SITE.

GENERAL PERMITTING REQUIREMENTS

1. All lease operations are subject to the terms of the lease and the lease stipulations, the regulations of 43 CFR Part 3100, Onshore Oil and Gas Orders, Notices to Lessees (NTLs), the approved APD, and any written instructions or orders of the Authorized Officer. The following requirements are emphasized.

Abandonment: In the event abandonment of the hole is desired, oral approval may be granted by this office but must be followed within five days with a Notice of Intention to Abandon (Form 3160-5). Unless the plugging is to take place immediately upon receipt of oral approval, the BLM Branch of Minerals must be notified at least 24 hours in advance of the plugging of the well in order that a representative can witness the plugging operation. The Subsequent Report of Abandonment (Form 3160-5) must be submitted within 30 days after the actual plugging of the wellbore, reporting where the plugs were placed and volumes of cement used, along with copies of the service company invoice and job log.

The operator shall promptly plug and abandon each newly-completed, recompleted, or producing well which is not capable of producing in paying quantities. No well may be temporarily abandoned for more than 30 days without prior approval of the Authorized Officer. When justified by the operator, the Authorized Officer may authorize additional delays, no one of which may exceed an additional 12 months. Upon removal of drilling or producing equipment from the site of a well, which is to be permanently abandoned, the surface of the lands disturbed shall be reclaimed in accordance with a plan first approved or prescribed by the Authorized Officer.

Completion Report: If the well is completed as a dryhole or as a producer, Well Completion or Recompletion Report and Log (Form 3160-4) must be submitted within 30 days after completion of the well or after completion of operations being performed, in accordance with 43 CFR 3160. Copies of all logs, core descriptions, core analyses, well test data, geologic summaries, sample descriptions, daily drilling reports, daily completion reports, and all other surveys or data obtained and compiled during the drilling, completion, and/or workover operations, will be filed with Form 3160-4.

2. Approval of this APD does not warrant that any party holds equitable or legal lease title.
3. This permit is valid for a period of one year from the day of approval or until lease expiration/termination, whichever is shorter. If the permit terminates, any surface disturbance created under the application shall be reclaimed in accordance with the approved plan.
4. The spud date shall be reported to the BLM Authorized Officer's representative within 24 hours following spudding. A follow-up report on Form 3160-5 confirming the date of spud shall be promptly submitted to this office within five working days from date of spud.
5. Verbal notification shall be given to the BLM Authorized Officer's representative at least 24 hours in advance of pluggings, DSTs and/or other formation tests, BOP tests, running and cementing casing (other than conductor casing), and drilling over lease expiration dates.
6. Verbal notification shall be given to the BLM's resource specialist at least 48 hours in advance of access road/well pad construction, seeding, and the initiation of any reclamation work.

7. Operations that deviate from the approved APD shall receive prior written approval from the Authorized Officer. Emergency approval may be obtained orally but such approval does not waive the written report requirement.
8. All lease exploration, development, production, and construction operations shall be conducted in a manner which conforms with all applicable Federal, State, and local laws and regulations.
9. Historic, Cultural, and Paleontological Resources

The operator shall be responsible for informing all persons associated with this project that they shall be subject to prosecution for damaging, altering, excavating, or removing any archaeological, historical, or vertebrate fossil objects or site. If archaeological, historical, or vertebrate fossil materials are discovered, the operator shall suspend all operations that further disturb such materials and immediately contact the Authorized Officer. Operations shall not resume until written authorization to proceed is issued by the Authorized Officer.

Within five working days, the Authorized Officer will evaluate the discovery and inform the operator of actions that will be necessary to prevent loss of significant cultural or scientific values.

The operator shall be responsible for the cost of any mitigation required by the Authorized Officer. The Authorized Officer will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the Authorized Officer that the required mitigation has been completed, the operator shall be allowed to resume operations.

10. Hazardous Waste: Those wastes that qualify as exempt, under the Resource Conservation and Recovery Act (RCRA), Oil and Gas Exemption, may be disposed of in the reserve pit. *Generally, oil or gas wastes are exempt if they: 1) have been sent downhole and then returned to the surface during oil/gas operations involving exploration, development, or production; or 2) have been generated during the removal of produced water or other contaminants from the oil/gas production stream.* The term hazardous waste, as referred to above, is defined as a listed (40 CFR 261.31-33) or characteristic (40 CFR 261.20-24) hazardous waste under RCRA.

ADDITIONAL PERMITTING REQUIREMENTS

Drilling Plan:

BOP

1. All BOPE shall meet or exceed the requirements of a 3M system as set forth in Onshore Order No. 2.
2. The ram type preventer(s) shall be tested to the approved BOP stack working pressure when a test plug is used. If a test plug is not used, the ram type preventer(s) shall be tested to 70% of the minimum internal yield pressure of the casing.
3. The annular type preventer(s) shall be tested to 50% of the approved BOP stack working pressure.
4. 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.
5. 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.
6. If an annular is used for the BOP, it will be tested to 2,000 psi.
7. Rotating heads are not acceptable for BOPs.
8. The kill line on the BOPE will have two valves and a check valve (two-inch minimum).
9. The choke line will have two valves, one being remotely operated (three-inch minimum).
10. The 5M BOPE will have a 5M annular.
11. The annular type preventer shall be tested to 1,000 psi.
12. All BOPE shall meet minimum standards for well control requirements as set forth in Onshore Order No. 2.
13. A Sundry Notice (Form 3160-5) shall be submitted to this office within five working days detailing the BOPE test (time/pressure chart).

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 material shall not be used to fill up around the surface casing in the event cement fall back occurs.
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.

Decision Record and FONSI - Atlantic Rim Coalbed Methane Project - Cow Creek Pod

4. All casing strings shall be tested, prior to drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1,500 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.
8. The volumes of cement for the production casing will be confirmed with the Authorized Officer prior to cementing.
9. The volume of cement for the production casing will be sufficient so the top of the cement shall be a minimum of 100 feet above the Lance formation.
10. There will be a minimum of 1,000 feet of surface casing.
11. The operator will notify the Authorized Officer of the selected casing design prior to running the casing.

** The surface casing shall have a minimum of one centralizer per joint on the bottom three joints of the casing starting with the shoe joint.
12. Prior to running any used casing, test results will be submitted to the Authorized Officer for approval. All casing shall meet or exceed API standards for new casing, and will have a minimal wall thickness of 87½% of the nominal wall thickness of new casing.
13. Test Sheets for the production casing must be submitted to this office and approved by the Authorized officer prior to running the casing.
14. The used casing must be approved by the Authorized Officer prior to running the casing. For approval, a copy of the test sheets for collapse, burst, tensile strength and wall thickness must be submitted to this office.
15. Test sheets for 27/8" casing will be submitted and approved by the Authorized Officer prior to running casing (the work order number on the casing must match the work order number on the test sheets).
16. The production casing will be N-80 from surface to 9420' and S-95 from 9420' to TD.
17. The top three joints of the surface casing will be 85/8", J-55, 32#.

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.
2. A trip tank shall be used on the 10M system.
3. Minimum mud monitoring equipment on the 10M system shall include: pit volume totalizer, stroke counter and flow sensor.

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 permanent plug placed in the well during drilling and/or completion operations 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.
5. DSTs shall meet or exceed the requirements set forth in Onshore Oil & Gas Order No. 2.
6. The tops of formations (including the Fox Hills) must be identified in the geological marker section of the Well Completion Report (form 3160-4).
7. All usable water zones must be isolated and protected.
8. All Special Drilling Operations per Onshore Order #2 during Air/Air Mist Drilling will be followed.
9. You will comply with all Special Drilling Operations per Onshore Order #2 during Air/Air Mist drilling.
10. All applicable requirements of Onshore Order No. 7 shall be met.
11. An Underground Injection Control (UIC) permit shall be obtained from the State of Wyoming and will be submitted to this office via a Sundry Notice, Form 3160-5, prior to any operations.
12. If approval for disposal is revoked by any authority, the BLM water disposal approval is immediately terminated and the operator is required to propose an alternative disposal method.
13. Information submitted in support of the UIC permit shall be transmitted to the Authorized Officer and must satisfy all applicable BLM statutory responsibilities.
14. The requirement for an automatic igniter or continuous pilot light on the blooie line will be waived.
15. A directional survey will be submitted to this office with the well Completion or Recompletion Report (Form 3160-4).
16. A Communitization Agreement or another arrangement for production allocation will be coordinated with the Reservoir Management Group.
17. Open hole logs consisting of deep, medium and shallow resistivity curves, a porosity log and gamma-ray and SP curves shall be run at TD to at least 50 feet above any zone which may be considered to be productive of hydrocarbons.

18. The production will be reported under Communitization Agreement WYW-110139.
19. The obligations of Section 9C of the amended Cow Creek Unit Agreement will be fulfilled. This office will be notified 24 hours prior to the pressure surveys. A minimum of 50 bbls will be produced from each zone prior to collecting the water sample. If mud or other contamination is visible, the zone will be produced until clean. If a breakdown fluid (acid or water) is used, this volume will be added to the minimum volume required.
20. The obligations of Section 9C of the amended Cow Creek Unit Agreement will be fulfilled. This office will be notified 24 hours prior to the pressure surveys.
21. Water will be collected and tested as follows:
 - A. Produce the well for a minimum of 25 bbls.
 - B. For chemical analyses for metal ions in the water, collect one filtered and acidized, one liter sample as follows:
 - 1) Filter the sample through a 0.45 μ filter, and
 - 2) Acidize the sample with one milliliter on nitric (HNO_3) acid.
 - C. For chemical analyses for standard constituents in the water collect one, raw (unfiltered and nonacidized), one liter sample.
 - D. Mark the sample bottles with the time and date the samples were collected, the location (Township, Range, Section, and quarter-quarter) of the well from which the sample was collected, the well number, and the initials of the sample collector.
 - E. At the well head, make field measurements of pH, Specific Conductance, and Temperature.
 - F. Chill samples and deliver to a certified chemical laboratory within seven days.
 - G. Initiate a "Chain-of-Custody" form to accompany the water samples to the chemical laboratory.

Conditions of Approval for Application for Permit to Drill

Lease Number: Cow Creek Area Pod

Date: February 14, 2002

Operator: Double Eagle

Well/Project Name: CBM

Legal Description: Sec.7, T.16 N., R.91 W.

DRILLING PLAN

BOP:

1. The BOPE approved for this Pod shall be tested to a minimum of 1,000 psi. The test will meet the requirements of Onshore Order No. 2.

2. 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.
3. 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 1,500 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

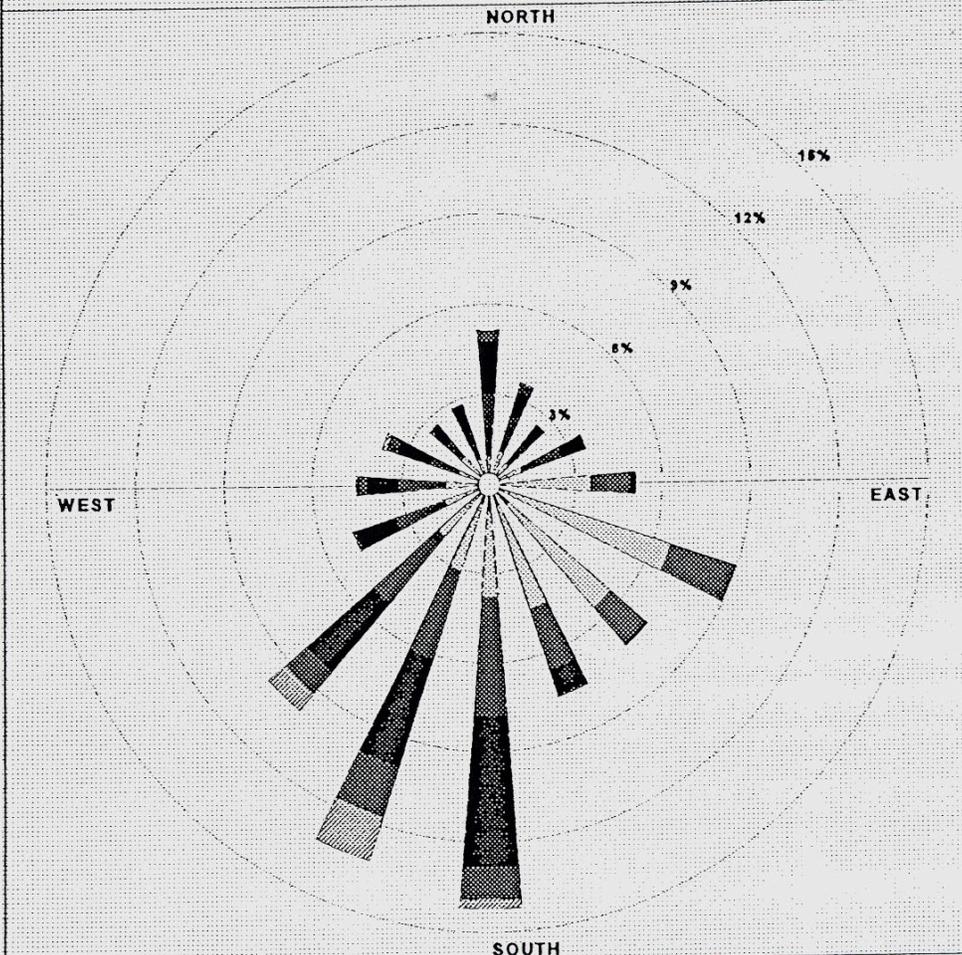
is granted, and you shall be required to compensate the lessor for that portion of the gas vented or flared without approval which is determined to have been avoidably lost.

APPENDIX F
SUPPORTING INFORMATION
FOR
AIR QUALITY

APPENDIX F
SUPPORTING INFORMATION
FOR
AIR QUALITY

WIND ROSE

Baggs, Wyoming December 1, 1994 - November 30, 1995



	<p>DISPLAY Wind Speed</p> <p>AVG. WIND SPEED 4.64 m/s</p> <p>ORIENTATION Direction (blowing from)</p>	<p>UNIT m/s</p> <p>CALM WINDS 0.02%</p>	<p>COMMENTS Wind direction is the direction from which the wind is blowing. For example, the wind is blowing from the north 5.2% of the time.</p>
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WRPLOT, Ver. 3.00 by Lakes Environmental Software - www.lakesenvironmental.com

Wind Rose for Baggs, Wyoming.