



**U.S. Department of the Interior**

Bureau of Land Management

Wyoming State Office

Rock Springs Field Office

September 2004

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**ENVIRONMENTAL ASSESSMENT,  
FINDING OF NO SIGNIFICANT IMPACT and  
DECISION RECORD for the  
Pacific Rim Shallow Gas Exploration  
and Development Project,  
Sweetwater County, Wyoming**

## MISSION STATEMENT

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

BLM/WY/PL-04/030+1310

**ENVIRONMENTAL ASSESSMENT,  
FINDING OF NO SIGNIFICANT IMPACT  
AND  
DECISION RECORD  
  
FOR  
  
PACIFIC RIM SHALLOW GAS EXPLORATION  
AND  
DEVELOPMENT PROJECT**

Prepared for

**Bureau of Land Management  
Rock Springs Field Office  
Rock Springs, Wyoming**

**WY-040-EA04-008**

This Environmental Analysis was prepared by *Gary Holsan Environmental Planning*, an environmental consulting firm, with the guidance, participation, and independent evaluation of the Bureau of Land Management (BLM). The BLM, in accordance with Federal regulation 40 CFR 1506.5(a) and (b), is in agreement with the findings of the analysis and approves and takes responsibility for the scope and content of this document.

**September, 2004**



# United States Department of the Interior

## BUREAU OF LAND MANAGEMENT

Rock Springs Field Office  
280 Highway 191 North  
Rock Springs, Wyoming 82901-3447

1792, 1310 (040)  
Pacific Rim Shallow  
Gas Project

September 1, 2004

Dear Reader:

The Bureau of Land Management (BLM) is providing you with a copy of the Environmental Assessment (EA), Finding of No Significant Impact (FONSI), and Decision Record (DR) for Warren E&P Pacific Rim Shallow Gas Exploration and Development Project.

The EA has been prepared pursuant to the National Environmental Policy Act, and other regulations and statutes, to analyze and determine the possible adverse environmental impacts which could result from Warren's proposal (Proposed Action and No Action Alternative) and to ensure that all reasonable mitigation measures have been identified. This EA is also intended to provide information to other regulatory agencies for use in their decision making process for other permits required for implementation of the project.

The DR identifies BLM's decision, explains the rationale for the reaching the decision, and includes Warren's committed measures and additional mitigation requirements for the Pacific Rim Project Area.

The BLM released a scoping notice to the public on October 17, 2003 and 15 comment letters were received. BLM has provided responses to all comments received during that 30-day comment period. Comment letters received during public scoping have been considered and documented in the analysis and/or decision (Appendix A of decision).

A copy of this EA/FONSI/DR has been sent to government entities, individuals, and organizations who commented on this project or have expressed an interest in mineral-related activities proposed on public lands. The BLM wishes to thank those individuals and organizations who provided input during this analysis process. If you should have any questions regarding this document, please contact Darlene Horsey, Project Lead, at the address shown above or phone (307) 352-0335.

Sincerely,

Michael R. Holbert

Field Manager

Enclosure

**DECISION RECORD**  
**FINDING OF NO SIGNIFICANT IMPACT**  
**For**  
**PACIFIC RIM SHALLOW GAS**  
**EXPLORATION AND DEVELOPMENT PROJECT**

**INTRODUCTION**

Warren E & P, Inc. (Warren) has notified the Bureau of Land Management (BLM), Rock Springs Field Office that they propose to explore and potentially develop shallow gas within the administrative boundary of the Rock Springs Field Office. The Pacific Rim Shallow Gas Project Area (PRPA) is generally located in Townships 13, 14 and 15 North, and Ranges 100 through 101 West, 6<sup>th</sup> Principal Meridian, Sweetwater County, Wyoming (see attached map).

The total project area encompasses approximately 47,597 acres. 41,738.60 acres are federal surface and minerals; 1,319.38 acres are State of Wyoming surface and minerals; 640 acres are State of Wyoming surface and federal minerals; 640 acres are private surface and federal minerals; and 3259.84 acres are private surface and minerals. Access to the area is U.S. Highway 430, Sweetwater County Road No. 24, and other existing or newly constructed roads.

The PRPA overlies an area mostly unexplored for natural gas. Since 1954, one producing well has been drilled and developed, five natural gas wells have been drilled and shut-in, and ten non-producing wells have been drilled, plugged and abandoned.

Warren proposes to drill a maximum of 120 wells. Drilling is expected to last for approximately two to four years, with a projected life-of-project (LOP) of 15 to 20 years.

Approximately 5 to 7 days would be required to drill, log, and run casing for each well, three additional days would be required to run a bond log, perforate the well casing and run an electric pump. The size of each drill site location will be approximately 180 feet by 270 feet (or 1.13 acres), and only those areas necessary to conduct drilling and completion operations would be cleared of vegetation. It is possible that some site disturbance may be required to place the drill rig on level ground. A reserve pit would be constructed on each drill site location to hold drilling fluids and cuttings. The reserve pit would be lined to prevent leakage and would be approximately 55 feet wide, 75 feet long and 10 feet deep. Drilling depths within the project area would vary from approximately 1,500 feet to 5,500 feet. Water for drilling purposes would be obtained from natural gas wells previously drilled and located within the area or water will be trucked in from Rock Springs, WY.

Each well would be designed with a 2” water discharge line and a 4” gas line extending from the individual well site to a 6” trunk line. Disposal of produced water, if any, would be through injection wells. No surface disposal or discharge of produced water is proposed. A separator may be needed at some or all well locations along with metering equipment.

Following drilling, completion and testing, flowlines and gathering facilities would be installed on commercial wells. Equipment would be powered by natural gas fired generators until powerlines could be constructed. Gas lines would be tied into compressor stations. The volume of produced gas would dictate the need for compression. An estimate of 5 compressors was identified in the EA each having a maximum of 2,300 horsepower. The locations of the compressors have not been identified at this time. Additional mitigation measures may be identified and applied during applications for permit to drill (APD) and rights-of-way (ROW) application reviews.

Currently, several existing roads access the proposed project area. These roads are both developed and undeveloped. The gas produced within the Pacific Rim Project area would be transported by both new and existing pipelines.

If the wells are non-productive or non-economical, they would be appropriately plugged; and all disturbed areas would be recontoured, reseeded, and otherwise reclaimed in compliance with applicable federal, state, or private landowner specifications.

A public scoping notice was released on October 17, 2003 for a 30-day review period. Fifteen comment letters were received and comments received during that period were considered and documented in the analysis. Comments received can be found in Appendix A of this decision.

## **ALTERNATIVES CONSIDERED**

*The Environmental Assessment for the Pacific Rim Shallow Gas Project* analyzed two alternatives. The Proposed action considered exploration and potential drilling of 120 shallow gas wells for both technical and economic reasons. Of the 120 wells, 108 would be located on public lands managed by the BLM, 8 would be located on private lands, and 4 would be located on State of Wyoming lands. 120 wells was determined by Warren to be the minimum number necessary to implement this project and to provide: (1) adequate surface area and geological coverage, (2) flexibility in the exploration program due to uncertainty in reservoir characteristics, and (3) an appropriate number of wells to evaluate project viability in a timely fashion. Additionally, 120 wells provides flexibility in repositioning a pod or group of wells in the event that the exploratory drilling attempts encounter poor quality reservoirs or indicate a need to drill future wells on denser spacing. The 120-well proposal also provides a sufficient number of wells to effectively dewater the target reservoirs. Drilling is expected to last approximately two to four years, with a projected LOP of 10 to 20 years.

The Proposed Action considers drilling on 160 acre spacing. The proposed well count permits an examination of reservoir and geological properties, as well as characteristics that allow for production from depths of 1,000 feet to 6,500 feet. Wells would target sandstone reservoirs and coal seams within the Almond Formation. In addition to wellpads and associated construction, Warren anticipates that additional infrastructure such as access roads, compression facilities, and pipelines would be necessary to develop this resource. Additional gas volumes would be transported via existing trunk pipelines, but additional gathering and transmission pipelines are anticipated, depending on the drilling success. The Proposed Action is discussed in-depth in Chapter 2, Proposed Action and Alternatives.

Under the No Action Alternative, the BLM examined the conditions associated with surface disturbance for roads and pipelines. Drilling on federal lands would not be allowed with a no action decision, the 108 wells proposed for federal surface would not be allowed. This alternative provides a benchmark, enabling the decisionmakers to compare the magnitude of environmental effects of the alternatives.

No other alternatives were analyzed in detail. Exploration activities were centered where the best geologic and hydrologic information could be obtained outside of sensitive areas.

### **ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL**

Horizontal or directional drilling might allow the clustering of surface facilities; however, this alternative has not been given further consideration for the following reasons:

- Economics. Horizontally drilled wells are estimated to cost 1.5 to 10 times as much as similar vertically drilled wells with no commensurate increase in production. This is due to the requirement of drilling as many laterals to develop the gas resource in a formation as there are coal seams. In addition, horizontal laterals would not be economical in thin coal seams because the cost of each lateral would exceed the return on ultimate gas recovery. In conventional drilling, thin coal seams will contribute to overall production; therefore maximizing recovery of the gas resource.
- Reservoir Issues. The science of coalbed methane gas wells does not warrant drilling horizontal wells for the purpose of intersecting naturally occurring vertical fractures. The coal seams of the Almond Coal formation contain several seams ranging in thickness from 1 to 10 feet. Some Almond coal seams may correlate between wells over long distances, but there are a high number of seams or riders that do not correlate from well to well. Thin or discontinuous target zones are poor prospects for horizontal drilling. In addition, horizontal drilling technology requires precise control of target locations in three dimensions. Even the thickest coal seams in the project area are below the vertical resolution of current seismic technology and yield no target control for lateral drilling. Thus, without the knowledge of coal seams locations, directional or horizontal drilling will not produce the desired results.

### **DECISION**

Based upon the analysis of the potential environmental impacts described in the Environmental Assessment for the Pacific Rim Shallow Gas Project and in consideration of the public, industry, and governmental agency comments received during the public scoping, the BLM approves the Proposed Action as described in Chapter 2 of the EA for the exploration and potential drilling of 120 wells and associated facilities within the PRPA. The decision incorporates a Summary of Scoping Notice Comments and BLM Responses in Appendix A; Project – Wide Mitigation and Procedures in Appendix B; Additional BLM Required Mitigation identified in Appendix C; U.S. Fish and Wildlife Service Final Conference Opinion or Conformation letter in Appendix D; Black-Footed Ferret Survey Results in Appendix E; Standard Seed Mixtures in Appendix F; and Wilderness Inventory and Study Procedures in Appendix G.

## **APPROVED PROJECT COMPONENTS**

This decision authorizes processing of APD or ROW applications for the following project components on BLM-administered public lands and/or minerals within the PRPA, subject to the requirements identified in Appendices B, C, and F of this decision. Approval of component permits is required prior to surface activities.

- Development of 120 shallow gas wells in the PRPA, of which 108 wells will be located on federal lands managed by the BLM. Construction of well pads on federal lands will cause an estimated initial total disturbance of 119 acres and a LOP disturbance of 22 acres.
- Construction of approximately 35.64 miles of new access roads, of which approximately 32.1 miles will be on federal lands. Estimated initial disturbance on federal lands would be 130 acres with the LOP disturbance at 115 acres.
- Construction of new gas lines and water gathering lines is approximately 35.64 miles with the estimated initial disturbance on federal lands at 130 acres. The lines would be wholly reclaimed resulting in LOP disturbance of zero acres.
- Construction of a compressor site with an approximate disturbance area of 4.5 acres.

As proposed, all production water will be reinjected into existing water disposal wells located within the project area. Other ancillary facilities may be necessary to meet the production needs. These facilities include but are not limited to:

- Produced water disposal equipment
- Individual well site compression
- Individual well site liquids recovery units
- Electrical power lines
- Gas metering stations
- Pipeline pigging facilities
- Field storage buildings
- Cathodic protection facilities

The number and location of such facilities are unknown at this time but most will be installed within the boundaries of existing or approved disturbances and would be subjected to appropriate environmental analysis once proposed.

### **Approval of the Proposed Action is Conditional upon the Following:**

- Implementation of the measures found in Appendix B project-wide mitigation.

- Implementation of the additional migration measures described in Appendix C.
- Adherence to any additional conditions of approval attached to the approved APD.
- Adherence to oil and gas leases and ROW grant stipulations.

## **RATIONALE FOR DECISION**

The decision to approve the Proposed Action is based on the following: 1) consistency with resource management plan and land use plan; 2) national policy; 3) agency statutory requirements; 4) relevant resource and economic issues; 5) application of measures to avoid or minimize environmental impacts; 6) finding of no significant impact; 7) public comments

### **1. Consistency with Resource Management Plan and Land Use Plan**

The Proposed Action is in conformance with the intent, meaning and scope of the Green River Resource Management Plan (RMP). The objectives for oil and gas management is to “provide consideration for oil and gas leasing, exploration, and development of oil and gas while protecting other values.” The objective of the realty program is to “manage the public lands to support the goals and objectives of other resource programs” and “to respond to public demand for land use authorization.” All public lands affected by the proposal are leased for oil and gas with appropriate mitigation including the requirement for an acceptable plan of which the criteria can be found in Appendix B and C of this decision record.

### **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 Mineral Leasing Act of 1920, as amended and the Federal Land Policy and Management Act of 1976, as amended. 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 of foreign energy supplies. The BLM oil and gas program is designed to encourage such development. 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). Cultural surveys and compliance with Section 106 of the Historic Preservation Act will be completed prior to approval of permits for individual components.

#### **4. Relevant Resource and Economic Issues**

Potential environmental impacts from the Pacific Rim Project proposal to surface and subsurface resources identified in the Environmental Assessment are considered minor and all deemed acceptable with mitigation identified in Appendices B and C of this decision record. The economic benefits derived from the implementation of the Proposed Action in the form of continuing employment opportunities, equipment, services, and potential revenues should production are considered important.

#### **5. Application of Measures to Avoid or Minimize Environmental Impacts**

Federal environmental protection laws, such as *the Clean Air Act*, *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 and the terms and conditions of rights-of-way grants. The adoption of the measures identified in Chapter 2.0 and 4.0 of the project EA and contained in this Decision Record in Appendices B and C provide practicable means to avoid or minimize potential environmental impacts. Should conditions warrant, additional measures could be applied to individual permits or ROW subject to additional analysis.

#### **6. Finding of No Significant Impact**

Based upon the analysis contained in the Environmental Assessment for the Pacific Rim Shallow Gas Exploration and Development Project and with the implementation of the protection measures identified in Appendix B of this decision, I have determined that the proposed action will not cause any significant impacts on the human, natural, and physical environment. Therefore, an environmental impact statement is not required.

#### **7. Opportunity for Public Involvement**

BLM initiated public scoping on October 17, 2003. Fifteen (15) comments were received in response to the EA during the 30-day comment period that ended November 17, 2003. All issues, concerns, and alternatives brought forth during public scoping have been considered during the analysis. The following is a list of those responding to the request for public comment.

- Dave Welch
- Roy Reynolds
- Lee Kreutzer
- Gene George
- Mark Kot
- John D. Pallensen
- Fish and Wildlife Service
- Petroleum Association of Wyoming
- Biodiversity Conservation Alliance
- National Wildlife Federation
- State of Wyoming

Department of Environmental Quality  
State of Historic Preservation Office  
State Engineer's Office

Office of State Lands and Investments  
Wyoming Game and Fish Department

A summary of the substantive comments and the BLM's response to comments are found in Appendix A.

**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 the information required under 43 CFR 3165.3(b) including all supporting documentation. Such a request must be filed in writing with the State Director (920), Bureau of Land Management, P.O. Box 1828, Cheyenne, Wyoming 82003, within 20 business days of the date such notice of decision was received or considered to have been received. This decision will be considered to have been received seven (7) business days from the date it is mailed.

The decision of the State Director could be appealed to the Interior Board of Land Appeals in accordance with the regulations contained in 43 CFR 3165.4 and 43 CFR 4. Each adverse party to any such appeal must be provided with all documentation in accordance with 43 CFR 4.413(a). The adverse party to any appeal of the decision by the State Director includes:

Scott Hedlund  
Warren E&P  
123 West First Street, Suite 505  
Casper, Wyoming 8201

**SIGNATURE**

  
Rook Springs Field Manager

  
Date

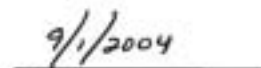
**FINDING OF NO SIGNIFICANT IMPACT  
PACIFIC RIM SHALLOW GAS  
EXPLORATION AND DEVELOPMENT PROJECT**

Based on my review of the analysis in the Pacific Rim Shallow Gas Exploration and Development Project Environmental Assessment (EA), I have determined that the Proposed Action is in conformance with the approved land use plan and will not have any significant impact on the human, natural, and physical environment. Therefore, an environmental impact statement is not required.

The EA shows that adverse impacts to surface ownership/land use and grazing; socioeconomics/environmental justice; cultural resources; soils/watershed; water resources; geology/minerals/paleontology; air quality/noise; vegetation/wetlands/noxious weeds; wildlife/fisheries; threatened, endangered, candidate, and special status species; wild horses; visual resources; transportation; and from the use of hazardous materials would all be minor, short term, necessary and due impacts. Potentially, substantial positive economic impacts could result for the company, and local, state, and federal governments.

The Green River Resource Management Plan (GRRMP) provides for the use of these public lands for natural shallow gas exploration and drilling such as this. The Proposed Action would be in conformance with these land use plans, and no amendments to our RMP would be necessary to implement the Proposed Action.

  
Michael R. Hallert  
Rock Springs Field Manager

  
9/1/2004  
Date