

January 16, 2012

Bureau of Land Management
Attention: Rough Draw, WYW-168317
1425 Fort Street
Buffalo, WY 82834
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Sent Via Overnight Mail and Email

Scoping Comments for BLM's EA Preparation on the Rough Draw Project, WYW-168317

Anadarko Petroleum Corporation (Anadarko) appreciates the opportunity to provide scoping comments as BLM prepares an environmental assessment (EA) on Patriot Energy Resources' (Patriot Energy) proposed Rough Draw Project. On December 6, 2011, the Bureau of Land Management (BLM) announced plans to prepare an EA for the injection of nutrients and produced water into federal coal seams to stimulate generation of methane gas. The project would utilize 283 existing coal bed methane (CBM) wells owned and operated by Patriot Energy within an 18,000 acre area and is located approximately 13 miles north of Gillette, Wyoming, in the Powder River Basin. On December 20, 2011, the BLM extended the scoping comment period to January 17, 2012. The Rough Draw EA when completed will disclose impacts of BLM's decision to approve the Land Use Application and Permit (Form 2920-1) for the project filed by Patriot Energy Resources on October 7th, 2011.

Anadarko is one of the largest independent oil and gas exploration companies in the United States and holds over 1.2 million acres of oil and gas leases and operates over 4000 CBM wells in the Powder River Basin through a wholly owned subsidiary, Lance Oil and Gas Company. In addition, we are the operator of the Atlantic Rim Field (a coal bed methane gas field) located near Rawlins, Wyoming. The Atlantic Rim Field is located near an area often referred to as the "UPRR Land Grant" or the "checker board", an area where Anadarko is owner of significant coal deposits. This ownership resulted from Anadarko's acquisition of Union Pacific Resources Corporation in 2000, whereby Anadarko acquired significant surface and mineral interests in the Land Grant which is almost 700 miles long and 40 miles wide. Anadarko now owns nearly 8 million acres of sub surface minerals through the Land Grant of which over 4 million sub surface mineral acres are located in Wyoming.

Anadarko recognizes that successful implementation of a new enhanced methane gas recovery process, utilizing existing CBM wells and infrastructure, has significant potential to extend the life of these natural gas fields. The American public will benefit from additional recoverable natural gas reserves as CBM operators avoid plugging wells prematurely. Local communities, and state and federal governments, also have the potential to benefit from the incremental royalties and taxes generated from the additional natural gas production. However, as an owner of significant coal mineral deposits APC remains concerned that the coal degradation and the subsequent coal estate devaluation is not yet fully understood.

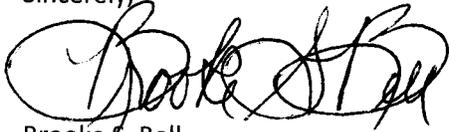
While Anadarko generally supports the proposed methane "harvesting" project, our comments focus on the importance of successful project implementation that not only meets Patriot Resources needs to enhance methane production, but answers the tough questions with regard to fresh water aquifer protection, extent of coal degradation over the long-term, impacts and liabilities of nutrient movement outside of the pilot or unit boundary, and adequacy of the liability bond funding.

Anadarko strongly encourages the BLM to provide substantive answers to the following questions with regard to the project. In the event the data does not exist to answer the questions, additional mitigation measures, additional assurances to minimize liability, and comprehensive baseline data collection and public reporting requirements should be incorporated in the EA and FONSI.

- What micro-organisms are involved and what by-products of the coal consumption process may be generated and remain in the coal seam reservoir water?
- What happens to the salinity, pH, and CO₂ content of the water in the reservoir?
- Is there potential the coal seam water quality can become more corrosive, acidic, or “sour”?
- What is the potential for increased amounts of the CO₂ in the methane gas stream?
- What equipment/systems will be needed to strip the CO₂ prior to delivery to area gas sales?
- How will the chemical makeup of the recycle water change over time?
- What happens to the coal that is consumed beyond a reduction in the caloric content? For example, will the “harvesting” process change the characteristics of how the coal is burned and what is released when the coal is burned?
- Does the “harvesting” physically change the coal or leave by-products that will make mining more difficult and costly? For example, do the by-products in the process leave residue, scale or other material in the cleat system that is costly to remove or dispose of during the coal mining process?
- What is the impact of the changing reservoir water quality over time and will subsequent coal mining operation be faced with costly waste water disposal or treatment efforts?
- What is the potential for H₂S as by-product of the process and will subsequent coal mining operations be faced with costly efforts to mitigate unforeseen issues related to H₂S?
- Will the mechanical integrity of the CBM well bores be at risk? Will the micro-organisms consume other materials or change the characteristics of down hole materials (steel casing or behind pipe cement barriers) that have potential negative impacts on the integrity of these protection barriers?
- What direction will the nutrients move and can it be predicted?
- What are the risks to production and liability for CBM operators outside of the pilot area project as nutrients move outside the pilot area?
- Will BLM require collection of water data from springs, rivers, creeks, drinking and stock water wells, and CBM wells to develop a comprehensive baseline of water quality in the area and beyond the pilot project boundaries? Who is responsible for these efforts?
- How does BLM or WDEQ plan to disclose changes in the nutrient mix/recipe and potential environmental impacts? Will BLM or WDEQ disclose what changes in the nutrient mix will warrant public disclosure and comment? For example, if a new chemical is introduced to the mix, or a higher concentration of a currently approved chemical, will BLM or WDEQ disclose these changes and ask for public comment?
- The funding of the bond (for example Year-One funding is approximately \$10,000) appears inadequate, as does the 3 to 1 gas to coal royalty valuation. When you consider that coal is currently priced at \$14 per ton and with 12.5% royalty, a section of land with 100 feet of coal can deliver bonus and royalty worth \$300 million.
- How will BLM address the future royalty value of the coal resource as part of the liability calculation?

Anadarko thanks you for your full consideration of our comments as you embark on the environmental assessment process.

Sincerely,

A handwritten signature in black ink, appearing to read "Brooke S. Bell". The signature is stylized with large, flowing loops and is positioned above the printed name.

Brooke S. Bell

Anadarko NEPA Project Manager – Rockies Region

Cc: Sean Urvan, Sr Attorney
Don Ballard, Sr Staff Landman
Dennis Ellis, Government Affairs Advisor
Ryan Helmer, Subsurface Supervisor
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