

Greater Natural Buttes Record of Decision UT-080-07-807

Vernal Field Office/Utah

Bureau of Land Management

May 2012



BLM Mission Statement

The Bureau of Land Management is responsible for the stewardship of our public lands. The BLM's mission is to sustain the health, diversity, and productivity of America's public lands for the use and enjoyment of present and future generations.

Management is based upon the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation, rangelands, timber, minerals, watershed, fish and wildlife, wilderness, air and scenic, scientific, and cultural values.

Acronyms and Abbreviations

ACEPM	applicant-committed environmental protection measure
APD	Application for Permit to Drill
ARMS	Air Resource Management Strategy
BA	biological assessment
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	best management practice
BWPD	barrels of water per day
CFR	Code of Federal Regulations
COA	Condition of Approval
EIS	environmental impact statement
GNBPA	Greater Natural Buttes Project Area
IM	Instruction Memorandum
KMG	Kerr-McGee Oil & Gas Onshore LP
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NOA	Notice of Availability
QAPP	Quality Assurance Project Plan
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
SDEIS	Supplement to the Draft EIS
UIC	Underground Injection Control
U.S.	United States
USC	United States Code
USDOJ	U.S. Department of the Interior
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

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1.0 Approval

I hereby approve the decision described in Section 3.0. My approval of this decision constitutes the final decision of the United States Department of the Interior and, in accordance with the regulations at 43 CFR 4.410(a)(3), is not subject to appeal under departmental regulations at 43 CFR Part 4.

Approved By:

Ken Salazar
Ken Salazar
Secretary
U.S. Department of the Interior

1010
May
April 8, 2012
Date

Robert V. Abbey
Robert V Abbey
Director
Bureau of Land Management

5-8-12
DATE

2.0 Summary

Kerr-McGee Oil & Gas Onshore LP (KMG), a wholly owned subsidiary of Anadarko Petroleum Corporation, proposed to the USDOl Bureau of Land Management (BLM) Vernal Field Office to conduct infill drilling to develop oil and natural gas resources within the 162,911-acre Greater Natural Buttes Project Area (GNBPA) located in Uintah County, Utah. Surface acreage in the GNBPA is approximately 54 percent Federal (managed by the BLM), approximately 20 percent the State of Utah, approximately 24 percent the Ute Tribe, and approximately 1 percent other private land owners (including allottees). Split estate lands comprise approximately 18 percent of the lands within the GNBPA; these lands are held in trust for the benefit of the Ute Indian Tribe, but the Federal government holds the mineral rights. The GNBPA is an existing gas producing region and overlies formations that include, but are not limited to, the Green River Formation, Wasatch Formation, Mesa Verde Group (including the Blackhawk Formation), Mancos Shale, and Dakota Sandstone.

Existing oil and gas infrastructure in the GNBPA (as of October 2007) consists of 1,562 vertical productive wells generally drilled on single well pads. Supporting infrastructure associated with this existing development includes access roads, mancamps, compressor stations, a gas processing plant, water management facilities (evaporation, recycling, and injection), gas and water pipelines, and power lines. The existing surface disturbance in the GNBPA as of October 2007 was estimated at 7,766 acres or about 4.8 percent of the GNBPA. This date was selected as a fixed point in time to represent information that is continuously changing. While the BLM recognizes there is a gap between this point in time and the publication date of this document, the information provides a consistent basis for evaluation of the proposed project and alternatives.

This Record of Decision (ROD) documents the Secretary's decision to approve the Resource Protection Alternative (identified as the Agency Preferred Alternative in the Greater Natural Buttes Final Environmental Impact Statement [EIS]; **Appendix A, Map A-1**). The Agency Preferred Alternative meets the BLM's purpose and need, as described in Section 1.3 of the Final EIS, because it will provide for oil and natural gas exploration and development while mitigating impacts on key resources including floodplains, riparian areas, and wetlands; threatened and endangered species; recreation; cultural resources; air quality; and water resources.

3.0 The Decision

The BLM has determined that the analysis contained in the Final EIS is adequate for the purposes of reaching an informed decision regarding the Greater Natural Buttes project. This ROD applies only to the BLM-administered Federal lands and mineral leases within the GNBPA.

The decision is hereby made to allow oil and natural gas drilling on leased federal lands as described under the Resource Protection Alternative of the Greater Natural Buttes Final EIS, subject to the attached conditions of approval (COAs), hereafter referred to as the Selected Alternative. The Selected Alternative was designed to utilize directional drilling within the GNBPA to reduce surface impacts relative to the Proposed Action to a maximum of 1 pad per 40 acres (maximum of 16 well pads per section) for total new surface disturbance of 8,147 acres (approximately 5 percent of the GNBPA). The available locations for new wells pads are programmatically depicted in the Selected Alternative map (**Appendix A, Map A-1**).

Under the Selected Alternative, KMG and other operators may drill 3,675 new wellbores at an average rate of approximately 358 wells per year, using up to 15 drilling rigs operating over a period of 10 years. The estimated productive life of each well will be approximately 30 to 50 years. Of the 3,675 new wellbores, approximately 1,484 will be vertically drilled on new well pads and approximately 634 Mesaverde-only completions will be drilled as deepened recompletions or twinned wells on existing well pads. The remaining 1,557 wellbores will be directionally drilled from new and existing well pads. These 3,675 new wellbores will be in addition to the 1,102 wells to be drilled under the No Action Alternative that were analyzed in prior National Environmental Policy Act (NEPA) documents.

Additional disturbance will occur from the construction of an estimated 594 miles of new access roads, 2 mancamps, 2 compressor stations, 2 water tank batteries, 15 water injection facilities (additional disturbance to well pads), 564 miles of gas gathering pipeline co-located with new or existing roads, 30 miles of new cross-country gas gathering pipeline, 35 miles of buried gas transport pipeline, 458 miles of water gathering pipeline (surface) co-located with new or existing roads, 25 miles of buried water pipeline, and 7 miles of overhead electric power lines.

Two compression sites will be constructed to meet project compression needs within the GNBPA. Each site will require approximately 20 acres for the life of the facility. These facilities will provide a total additional 79,000 horsepower of new compression; approximately half gas fired and half electrically driven.

Water use is estimated to be 2.06 acre-feet per well. An estimated 7,571 acre-feet of fresh water will be required to drill and complete 3,675 wells or approximately 757 acre-feet each year for the projected 10-year drilling period. Recycling efforts will be implemented to reduce water use.

Produced water will be transported via truck to central tank storage facilities and then transported by buried pipeline for disposal in existing evaporation ponds or by underground injection. Average annual produced water is estimated to be approximately 1,385 acre-feet per year. Approximately 353 acre-feet per year (7,500 barrels of water per day [BWPD]) will be disposed in evaporation ponds and 1,032 acre-feet per year (21,900 BWPD) will be disposed by underground injection.

Under the Selected Alternative, the BLM will require, monitor, and enforce the following integral components of the Selected Alternative:

- All features of the Selected Alternative, as described in Section 2.7 of the Final EIS, including but not limited to the following:
 - No well pads will be located where topography, such as steep slopes, would require construction of a well pad for a vertically drilled well that would use major cuts-and-fills;

- No well pads will be located in the viewshed of the White River corridor (line-of-sight from the centerline up to 0.5 mile along both sides of the river), outside of the Indian Trust Lands;
- No well pads will be located in areas within 600 feet of the White River within the Indian Trust Lands;
- No well pads will be located within the 100-year floodplain of the White River and Green River, and 5 miles up major tributaries of the White River, regardless of surface ownership;
- KMG will not create new pads in the cactus core conservation areas without formal consultation, with the exception of 15 quarter-quarter sections within the cactus core conservation areas where new pad construction will be allowed, subject to the following conditions from the U.S. Fish and Wildlife Service (USFWS) Biological Opinion for this project:
 - Where topographically feasible, expansion of existing well pads will take priority in Level 1 cactus core conservation areas;
 - Where feasible, new pads will be placed on or adjacent to existing disturbance (e.g., roads) in the cactus core conservation areas;
 - Where topographically feasible, drill mats or similar devices will be used for new well pad development in the cactus core conservation areas;
 - Due to the high value of Level 1 cactus core conservation areas, KMG will notify the USFWS and work with the BLM (and the Bureau of Indian Affairs [BIA] if on tribal surface) to determine new pad placement that places a priority on avoiding cactus impacts when in these areas; and
 - New well pad development will not occur in cactus core conservation areas located in the northeast corner of the project area (i.e., the population located primarily in T8S R23E and the northern portion of T9S R23E) unless no other location for access to the mineral resource is feasible.
- Applicant-committed environmental protection measures (ACEPMs) and COAs, developed by the BLM and its cooperators during the EIS process in consideration of concerns raised by the public, federal agencies, and affected tribes (**Appendix B**);
- BLM and U.S. Environmental Protection Agency (USEPA)-identified water quality monitoring and mitigating measures, documented in the Long-term Water Resources Monitoring Plan (**Appendix C**);
- ACEPMs and USFWS-identified Reasonable and Prudent Measures and Terms and Conditions documented in the Biological Opinion prepared for this project (**Appendix D**); and
- The following Conservation Measures from the USFWS Biological Opinion:
 - Specific to this project, KMG should avoid any new surface disturbance (including construction of any new wells) in core conservation areas and, if new surface disturbance is unavoidable, should work with the USFWS to minimize impacts in core conservation areas.
 - When results from the applicant-committed enhanced reclamation study (Biological Opinion page 11 bullet 7) become available, KMG, BLM, and BIA should work with the USFWS to incorporate effective techniques into reclamation activities.

4.0 What the Decision Does Not Provide

Decisions contained within this document apply only to BLM-administered Federal lands and minerals, although agencies and individuals that have adjoining lands may, at their discretion, use all relevant and reasonable mitigation measures contained within this ROD, which have been identified through a comprehensive environmental analysis.

This ROD does not authorize site-specific construction, maintenance, or use of new wells, pads, pipelines, or other facilities on BLM-administered lands. Rather, the proponent and/or affiliates are required to submit Applications for Permit to Drill (APDs), Sundry Notices, and ROW applications for approval of wells, well pads, pipelines, roads, or other ancillary facilities associated with project development. Site-specific NEPA review and approval of such applications are required prior to initiating surface-disturbing activities.

4.1 Mitigation Measures Not Carried Forward as a COA

All practicable means to avoid or minimize environmental harm have been considered and adopted. Many of the measures included in this ROD are designed to provide for adaptive management or allow the BLM to make mid-course corrections as knowledge is gained about their effectiveness through monitoring. However, the following measures were not carried forward as COAs for the reason described (**Table 1**).

Table 1 Mitigation Measures not Carried Forward

Measure	Rationale
Well density would be limited to no less than 40-acre spacing surface density within 0.5 mile of floodplains of major drainages (Sand Wash, Cottonwood Wash, Bitter Creek, White River, and Green River) and within occupied threatened and endangered plant habitat. This mitigation measure would be applied only if there is a demonstrated need (i.e., only if other mitigations do not adequately mitigate impacts).	This measure is rendered unnecessary by the Selected Alternative, which allows a maximum of 1 pad per 40 acres.
During the APD process, surface water considerations paralleling those identified for groundwater in BLM Instruction Memorandum (IM) No. UT 2010-055, Appendix C – Hydrologic Review, would be identified for further mitigation and monitoring of surface water resources. This measure would include the listing of nearby streams, springs, seeps, and riparian areas and their characteristics that could be adversely affected by the proposed drilling location or associated facilities. Recommended protective measures for such resources would be specified from the ACEPMs, the Reasonable and Prudent Practices for Stabilization document, the Gold Book, the BLM Vernal Field Office Resource Management Plan (RMP), or other guidelines.	This measure is entirely encompassed within the water monitoring plan, which is integral to the Selected Alternative. This measure was not carried forward to eliminate redundancy with the more fully developed water monitoring plan.
Where feasible, and immediately prior to topsoil salvage ahead of facilities construction (soil disturbance), the near surface layers of soils containing biological soil crusts would be salvaged separately from the underlying topsoil layer. The salvaged biological soil crusts materials would then be transported and spread as inoculum onto re-contoured surfaces undergoing interim or final reclamation or onto salvaged topsoil storage piles to support their stabilization until used in reclamation.	Due to the prevalence of high constraint soils (which includes shallow depth to bedrock) in the GNBPA (see Final EIS Figure 3.9-1), salvaging biological soils crusts separately from topsoil is not technically feasible.

5.0 Summary of Alternatives Considered

5.1 Overview

Four alternatives were considered in detail in the Final EIS. For a complete description of these alternatives, refer to Sections 2.1 through 2.8 of the Final EIS. **Table 2** provides a comparison of the surface disturbance for each of the four alternatives, including an estimate of areas BLM would require the project proponents to reclaim during project operations (“reclaimable disturbance”). The BLM used the total initial surface disturbance for each alternative as the basis for conducting impact analysis in the EIS. The following subsections highlight the major differences between the alternatives considered in detail. Table 2.10-2 of the Final EIS presents a summary comparison of impacts of the alternatives.

Two additional alternatives were considered but eliminated from detailed analysis: No Further Development and Phased Development. Refer to Section 2.9 of the Final EIS for a description of these alternatives.

5.1.1 Alternatives Considered

The four analyzed alternatives within the GNBPA included the No Action Alternative, the Proposed Action Alternative, the Resource Protection Alternative, and the Optimal Recovery Alternative. The Agency Preferred Alternative is the Resource Protection Alternative.

No Action: Under the No Action Alternative, drilling and completion of development wells and infrastructure would continue as described in approved NEPA decision documents. An estimated 1,102 wells remain to be drilled in addition to the 1,562 existing wells in the GNBPA (as of October 2007). Supporting infrastructure associated with this alternative includes access roads; compressor stations; water management facilities (evaporation, recycling, and injection); gas and water pipelines; and power lines. Because reclamation is difficult to achieve in the Uinta Basin, all disturbance is assumed to be present for more than 3 years, typically for the life of the project. The total estimated new surface disturbance for the No Action Alternative would be approximately 4,702 acres or about 2.9 percent of the GNBPA.

Approval of the No Action Alternative would result in the fewest environmental impacts based on the lowest number of proposed wells and facilities. This alternative would not allow KMG to develop mineral resources, or allow BLM to facilitate action on future site-specific applications related to this proposal, and would therefore not meet the purpose and need of the project as described in Section 1.3 of the FEIS.

Proposed Action: This alternative is KMG’s proposed infill drilling project within the GNBPA. Approximately 3,675 wells would be drilled from 3,041 new well pads placed at up to 20-acre surface spacing at an average rate of 358 wells per year over a period of 10 years or until the resource base is fully developed. The productive life of each well is estimated to be approximately 30 to 50 years. In addition, KMG would construct access roads, pipelines, electric power lines, compression facilities, and water disposal facilities. The total estimated new surface disturbance for the Proposed Action would be 12,658 acres or about 7.8 percent of the GNBPA. Analysis of the Proposed Action Alternative assumes vertical wells would be drilled at all 3,041 new well pad locations.

This alternative was not selected based on the need for additional mitigation measures or design features, such as directional drilling, to reduce environmental impacts.

Resource Protection Alternative: This alternative would consist of the same number of wells as the Proposed Action (3,675 wells) but well pads would be limited to 40-acre surface spacing. This alternative would effectively reduce the number of well pads (approximately 1,484 well pads) and reduce the surface disturbance of the project. This alternative also would include 634 Mesaverde-only completions that would be

Table 2 Disturbance Comparison for GNBPA Alternatives (Excluding Existing Condition)

New Facilities	Size (ROW width [feet] or acres/facility)	New Surface Disturbance by Alternative							
		No Action		Proposed Action		Resource Protection		Optimal Recovery	
		Multiplier (number or miles)	Disturbance (acres or % of GNBPA)	Multiplier (number or miles)	Disturbance (acres or % of GNBPA)	Multiplier (number or miles)	Disturbance (acres or % of GNBPA)	Multiplier (number or miles)	Disturbance (acres or % of GNBPA)
Roads									
Access Roads ¹	45 feet	276 miles	1,503	760 miles	4,147	594 miles	3,238	1,627 miles	8,875
Well Pads									
New Single Well Pads	2.5 acres	1,102 each	2,755	3,041 each	7,603	1,484 each	3,710	12,812 each	32,030
Twinned Well Pads (Additional Disturbance)	0.2 acre	0 each	0	634 each	127	634 each	127	634 each	127
Multi-well Pads (Additional Disturbance)	0.2 acre	0 each	0	0 each	0	1,557 each	311	0 each	0
Well Pad Subtotal		1,102 each	2,755	3,675 each	7,729	3,675 each	4,148	13,446 each	32,157
Construction/Production Facilities									
Mancamps	5 acres	0 each	0	2 each	10	2 each	10	2 each	10
Compressor Stations	20 acres	6 each	120	2 each	40	2 each	40	5 each	100
Water Tank Batteries	3 acres	8 each	24	2 each	6	2 each	6	5 each	15
Water Injection Facilities (Additional Disturbance)	0.2 acre	0 each	0.0	15 each	3	15 each	3	25 each	5
Construction/Production Facilities Subtotal			144		59		59		130
Linear Facilities									
Gas Gathering Pipelines – Common ROW	0 feet	262 miles	0	722 miles	0	564 miles	0	1,546 miles	0
Gas Gathering Pipelines – Cross-country	20 feet	14 miles	33	38 miles	92	30 miles	72	81 miles	197
Gas Transport Pipelines (Buried)	75 feet	0 miles	0	35 miles	318	35 miles	318	70 miles	636
Water Gathering Pipelines – Common ROW (Surface)	0 feet	0 miles	0	587 miles	0	458 miles	0	1,256 miles	0
Water Connecting Pipelines (Buried)	75 feet	26 miles	236	25 miles	227	25 miles	227	50 miles	455
Electric Power Lines	100 feet	2.5 miles	30	7 miles	85	7 miles	85	14 miles	170
Linear Facilities Subtotal			300		722		702		1,458
New Surface Disturbance (acre)			4,702		12,658		8,147		42,620
GNBPA New Disturbance (%)			2.9%		7.8%		5.0%		26.2%
No Action Alternative New Disturbance (acre)					4,702		4,702		4,702
Existing Surface Disturbance (acre)			7,766		7,766		7,766		7,766
Total Surface Disturbance (acre)			12,468		25,125		20,615		55,088
Total GNBPA Disturbed (%)			7.7%		15.4%		12.7%		33.8%
Surface Disturbance Interim Reclamation Estimates²									
Reclaimable New Surface Disturbance (acre)			1,753		4,731		3,387		13,189
Reclaimable No Action New Surface Dist (acre)					1,753		1,753		1,753
Reclaimable Existing Surface Disturbance (acre)			3,267		3,267		3,267		3,267
Total Est. Reclaimable Surface Disturbance (acre)			5,020		9,751		8,407		18,209
Reclaimable Surface Disturbance (%)			40.3%		39%		41%		33%
Reclaimable Surface Dist as % of GNBPA			3.1%		6.0%		5.2%		11.2%

¹ Assume access road length of 0.25 mile/well pad for No Action and Proposed Action; 0.4 mile/well pad for Resource Protection Alternative; 0.127 mile/well pad for Optimal Recovery Alternative.

² Interim reclamation estimates are based on the potential to reclaim 0.5 acre per new well pad, 27 feet ROW for new access roads, and all new Linear Facilities summarized in the table above.

drilled as deepened recompletions or twinned wells on existing well pads. If full recovery of the oil and natural gas resource requires the drilling of wellbores at a downhole spacing of 20 acres or less, then directional drilling techniques would be required. Therefore, this alternative assumed 1,557 directionally drilled wellbores to establish the same number of wellbores (3,675) as the Proposed Action Alternative.

The disturbance impacts associated with production facilities (man camps, compressor stations, water tank batteries, and water disposal wells) as well as electrical power requirements are expected to be the same for this alternative as would be the case for the Proposed Action Alternative. The total estimated new surface disturbance for the Resource Protection Alternative would be 8,147 acres or about 5 percent of the GNBPA.

The Resource Protection Alternative would allow surface spacing on a 1 pad per 40-acres basis subject to the following constraining factors:

- Topography, including steep slopes that preclude construction of a well pad for a vertically drilled well without major cuts-and-fills;
- The viewshed of the White River corridor (line-of-sight from the centerline up to 0.5 mile along both sides of the river), outside of the Indian Trust Lands;
- Areas within 600 feet of the White River within the Indian Trust Lands; and
- Areas within the 100-year floodplain of the White River and Green River and 5 miles up major tributaries of the White River regardless of surface ownership.

This alternative, as modified by the COAs, was carried forward in this ROD as the Selected Alternative.

Optimal Recovery Alternative: This alternative would maximize the recovery of oil and natural gas resources by increasing surface well pad spacing to 10 acres throughout the GNBPA. Assuming a vertical well would be drilled from each new well pad, KMG and other operators would drill an estimated 13,446 new wellbores. KMG's activities would be similar to the Proposed Action Alternative. Additional wells would be drilled at an average rate of 672 wells per year using 28 drilling rigs. The wells would be drilled over a period of approximately 20 years or until the resource base is fully developed. The estimated productive life of each well would be approximately 30 to 50 years. The drilling schedule, well drilling and completion parameters, equipment and manpower requirements, compressor stations, water disposal facilities, buried water and gas pipelines, electric power facilities, and ancillary facilities would be similar to that for the Proposed Action Alternative. In some cases, more facilities would be constructed because of the higher number of wells and increased gas volumes produced under this alternative. The total estimated new surface disturbance for the Optimal Recovery Alternative would be 42,620 acres or about 26 percent of the GNBPA.

This alternative was not selected based on the need for additional mitigation measures or design features, such as directional drilling and a smaller evaporative facility, necessary to reduce environmental impacts.

5.1.2 Environmentally Preferred Alternative

In accordance with the Council on Environmental Quality regulations (40 CFR 1502.2(b)), one or more environmentally preferred alternative(s) must be identified in the ROD. An environmentally preferred alternative is an alternative that would cause the least damage to the biological and physical environment and would best protect, preserve, and enhance historic, cultural, and natural resources. The BLM has determined that the Resource Protection Alternative is the environmentally preferred alternative.

The Resource Protection Alternative is the environmentally preferred alternative that would meet the purpose and need. This alternative would have the lowest levels of surface disturbance and development of all the alternatives, with the exception of the No Action Alternative. The Resource Protection Alternative, combined with all practicable mitigation measures identified during the NEPA process, was carried forward as the Selected Alternative.

6.0 Management Considerations

The BLM developed the Greater Natural Buttes EIS to consider KMG's proposed project and to decide whether to deny, approve, or approve with modification this proposal. Based on the Final EIS analysis, the Secretary has determined that the Resource Protection Alternative would best avoid or reduce impacts to sensitive resources, as described in Chapter 3.0 of this ROD. This alternative would allow development on valid existing leases throughout the GNBPA, and would best meet the purpose and need of the project as described below and in Section 1.3 of the Final EIS. The sections below outline additional considerations that contributed to BLM's approval of the Selected Alternative.

6.1 The Purpose and Need of the Project

The need for a BLM action is to respond to this proposal and to evaluate potential impacts resulting from implementing future plans and applications related to this proposal. The Federal Land Policy and Management Act of 1976 (Public Law 94-579, 43 United States Code [USC] 1701 et seq.) recognizes oil and gas development as one of the "principal" uses of the public lands. Federal mineral leasing regulations and policies recognize the importance of responsible federal mineral resource development to meet continuing national needs and economic demands.

The purpose of the EIS is to facilitate the BLM decision-making process whether to approve, approve with modifications, or disapprove the proposed project or project components based on an evaluation of the expected impacts. Through this process, the BLM's purpose is to minimize or avoid environmental impacts to the extent possible, while allowing KMG to exercise its valid lease rights.

6.2 Conformance with BLM Land Use Plans

Management objectives within the Vernal RMP ROD include leasing oil and gas resources while protecting or mitigating impacts to other resource values, and assumes development of those leases. As such, the Selected Alternative is consistent with the management decisions contained in the RMP. It is noted that surface occupancy or some existing oil and gas leases may not appear to be in conformance with the Vernal RMP; however, existing lease terms are not affected or altered by the recently approved RMP (as stated on page 21 of the Vernal RMP ROD). To the extent feasible, the Selected Alternative would comply with the BLM's Utah Public Lands Health Standards (BLM 1997). The Selected Alternative also would comply with federal policies related to riparian habitats, floodplains, and drainages.

6.3 Other Alternatives Considered in the EIS

All alternatives analyzed in detail are briefly described in Chapter 5.0 of this ROD, with a rationale explaining why they were or were not carried forward as the Selected Alternative. The environmentally preferred alternative also is identified in Chapter 5.0.

7.0 Consultation, Coordination, and Public Involvement

Consultation and coordination for the Greater Natural Buttes project is described in Chapter 6.0 of the Final EIS. A summary of these efforts follows.

7.1 Cooperating Agencies

The following cooperating agencies were given opportunities to review internal drafts and provide feedback during the development of the Draft EIS and Final EIS. Their feedback helped refine the alternatives, the impact analysis, and the associated mitigation.

Uintah County was invited to be a cooperating agency in the EIS process on July 19, 2007. The invitation was accepted and a Cooperating Agency Memorandum of Understanding (MOU) was signed on August 1, 2007. Preliminary drafts of the EIS were provided to Uintah County for review.

The U.S. Army Corps of Engineers reviewed and commented on preliminary drafts of the EIS under the Energy Pilot Office program MOU.

On November 29, 2007, the BIA requested to become a cooperating agency for this EIS. The Uintah and Ouray Agency was invited to be a cooperator in the EIS process on December 21, 2007. The invitation was accepted and a MOU was signed on April 2, 2008. Preliminary drafts of the EIS were provided to the BIA for review.

The USFWS, Utah Field Office reviewed preliminary drafts of the EIS through the Energy Pilot Office program MOU. Consultation under Section 7 of the Endangered Species Act has been conducted, as described in Section 7.4.

7.2 U.S. Environmental Protection Agency Region 8 Coordination

The USEPA contacted the Vernal Field Office during the public comment period for the Draft EIS regarding their concerns with the document. Close coordination was immediately initiated with the USEPA. Multiple conference calls and face-to-face meetings were held to discuss methods to resolve these concerns. A detailed response to the USEPA comments is included in the Final EIS Appendix P: Response to Comments. A brief description of the USEPA's concerns and how their concerns were addressed are as follows.

The USEPA expressed concerns regarding the air quality and water quality impact analysis and mitigation and environmental justice impact analysis. The BLM agreed to prepare a Supplement to the Draft EIS (SDEIS) to update the air quality and environmental justice sections. Grading of the Draft EIS was delayed pending the public comment period of the SDEIS. Preparation of the SDEIS was planned with the USEPA, and internal drafts were reviewed by the USEPA to ensure their concerns were addressed prior to publication of the SDEIS.

To address the air quality concerns, the SDEIS contained updated information regarding National Ambient Air Quality Standards, regional monitoring data, the best available emissions mitigation measures, and impact analysis in relation to those standards and data. The ACEPMs also were updated to include an adaptive management strategy that allows the BLM to adjust future site-specific implementation of the decision based on new air quality data that is being gathered or generated on a Utah-wide basis through the Utah Air Resource Technical Advisory Group and the BLM's Air Resource Management Strategy (ARMS). The ARMS has been designed to develop an ozone action plan to address wintertime ozone formation in the Uinta Basin associated with oil and gas operations through adaptive management. The ARMS consists of the following actions: 1) refine air quality modeling predictions; 2) develop a Uinta Basin ozone action plan; and 3) implement a regional ozone action plan. The first two elements of ARMS are being implemented by the

BLM and other agency stakeholders independent of this ROD. Regional operators may participate in these initial planning steps, thereby having the opportunity to contribute to the outcome of the process. The third element would require specific action by KMG and other oil and gas operators in the Uinta Basin. Until the ARMS is completed, a project-specific adaptive management plan for air quality has been developed and is included as a COA of this project. When the ARMS is completed, currently estimated to be near the end of 2012, site-specific implementation of this project will be adjusted as necessary.

Environmental justice concerns were addressed by updating the analysis in the SDEIS to disclose any potential disproportionate adverse effects to environmental justice communities. The air quality, economic, and traffic impact analyses were specifically revised to ensure accurate and adequate analysis.

Water quality concerns were addressed by creating a water monitoring plan (**Appendix C**). This plan contains an adaptive strategy to track upstream and downstream surface and ground water quality and outlines an adaptive management strategy to respond to water quality degradation.

7.3 National Historic Preservation Act Section 106 Consultation

In the summer and fall of 2008, a Class III (field survey) inventory was conducted on portions of the GNBPA that had not been previously surveyed. Class III block surveys have been completed for the GNBPA and the results of the surveys were sent to the Utah State Historic Preservation Officer in March of 2011. Concurrences were received in April of 2011. Consultation is considered to be closed. For documentation of this process, refer to Attachment 4 of this ROD.

7.4 Government to Government Consultation

The GNBPA is within an area historically used by 12 Native American Tribes, and within close proximity to the Ute Indian Tribe Uintah and Ouray Reservation. These twelve Native American Tribal organizations were invited to formally participate as consulting parties to the EIS on January 9, 2008. Three Tribes responded to the invitation: the Pueblo of Laguna, the Navajo Nation, and the Hopi Tribe. The Pueblo of Laguna and Navajo Nation indicated that the proposed project would have no significant impact on any traditional cultural properties or historic properties of importance to the Tribes. The Navajo Nation requested notification of any unanticipated discoveries unearthed during the course of the project, and the Pueblo of Laguna requested notification in the event any new archaeological sites are discovered and artifacts are recovered. The Hopi Tribe expressed concern with stone cairn sites previously documented in the GNBPA. At the request of the Hopi, the BLM and Director of the Hopi Office of Cultural Preservation visited several of the stone cairn sites in the GNBPA. In August 2009, the BLM prepared a report summarizing the site visit results. No written responses were received from the Hopi. The BLM met with the Hopi in April of 2011 to follow up on the expressed concerns. No further concerns were expressed. Consultation is considered to be closed. For documentation of this process, refer to **Appendix E** of this ROD.

7.5 Section 7 Consultation under the Endangered Species Act

The BLM coordinated with the USFWS throughout the preparation of the EIS through the Energy Policy Act Pilot Office program. Based on an agreement between the BLM and USFWS, the preliminary Final EIS was used as the Biological Assessment (BA) for this project. BLM initiated formal consultation for the Resource Protection Alternative on September 16, 2011, by submitting the BA to the USFWS. The USFWS concluded consultation by signing a Biological Opinion on January 27, 2012. The Biological Opinion is included as **Appendix D** of this ROD.

All Reasonable and Prudent Measures and Terms and Conditions from the Biological Opinion are integral to the Selected Alternative.

Several USFWS Conservation Recommendations suggested special status species data collection and monitoring programs that had a scope larger than this project and project area. These measures will be implemented on BLM-administered land by the USFWS and the BLM independent of this ROD.

The proponent should consider implementing the following USFWS identified project-specific Conservation Recommendations as appropriate, and the USFWS has requested to be notified when they are implemented. .

- Follow the same ACEPMs across the project area regardless of land ownership.
- KMG employees should notify the USFWS or the BLM immediately if they observe non-federal or non-project-related personnel looking for *Sclerocactus*, or notice other suspicious behavior that may indicate illegal collection of the species.
- During maintenance activities of infrastructure that crosses through occupied cactus habitat, KMG should protect the cactus by:
 - Notifying maintenance crews when they will be working in a sensitive cactus area and provide them with Global Positioning System information or maps of areas to avoid;
 - Have a botanist on site prior to and during maintenance activities to flag cacti or avoidance areas (remove the flags immediately after work is completed); or
 - Install protective fencing (e.g., silt fencing) around cacti that are downslope or downwind of surface-disturbing maintenance activities (remove the fencing immediately after work is completed).
- Apply the same conservation measures that KMG practices on federal lands across all of their project areas that contain *S. wetlandicus* habitat.
- Employ closed-loop drilling methods for drilling and completion activities within all designated 100-year floodplains. This will apply to both new construction and expansion of existing facilities.
- Recently, researchers have begun testing large-bodied fish in the White River for mercury concentrations using muscle biopsies – a non-lethal form of data collection. Increased knowledge about mercury content in these fish species will help guide recovery efforts by indicating if mercury pollution is an issue of primary importance. Currently, the USFWS has muscle plug collections in deep freeze storage that have yet to be analyzed for mercury content. The USFWS recommends that the project applicant fund the analysis of these muscle plugs, assisting the USFWS in a key research component. Analyzing the existing samples will cost approximately \$1,500.

7.6 Washington Office Instruction Memorandum 2012-043

Just prior to the publication of the Final EIS, and after analysis in the Final EIS was completed, the BLM Washington Office issued IM 2012-043 outlining an interim policy concerning Greater sage-grouse management. During the preparation of the Draft EIS and Final EIS, the BLM coordinated with both the USFWS and the Utah Division of Wildlife Resources. Mitigation was identified on a programmatic level; however, the site-specific adequacy of the mitigation to protect sage grouse habitat cannot be determined until a site-specific application is received. Impacts disclosed in the Greater Natural Buttes Final EIS are therefore conservative and sufficient to make a reasoned choice among alternatives.

7.7 Public Involvement

A summary of the public involvement process for this project is included below. For a complete description of public involvement, refer to Chapter 6.0 of the Final EIS.

7.7.1 Public Scoping

A Notice of Intent was published in the Federal Register on October 5, 2007, announcing the BLM Vernal Field Office's intent to prepare an EIS for the Greater Natural Buttes Well Infill Project. Cards providing notice of the 30-day public scoping period were mailed to the interested parties on the BLM Vernal Field Office's NEPA mailing list. The mailing list included a total of 93 individuals representing federal agencies, state agencies, local agencies, elected officials, tribes, the media and libraries in the vicinity, as well as other interested stakeholders. A public scoping meeting was held in Vernal, Utah, on October 24, 2007. The meeting was attended by 7 individuals not affiliated with the BLM, KMG, or the third-party NEPA contractor (AECOM). The official scoping period ended November 5, 2007. During the 30-day scoping period, the Vernal Field Office received 9 letters outlining the primary concerns of the public. These letters are included in the project administrative record. The issues of concern raised during scoping are summarized in Section 1.6 of the Final EIS.

7.7.2 Draft EIS and Supplement to the Draft EIS

The Notice of Availability (NOA) for the Draft EIS was published in the Federal Register on July 16, 2010. The BLM mailed postcards notifying the public of the availability of the Draft EIS on the BLM website or at the BLM Vernal Field Office to 124 interested parties, including federal, state, and local officials and agencies; special interest groups; parties to the proceeding; area libraries and newspapers; and individuals and affected permittees. An open house style public meeting was held in Vernal, Utah, on August 10, 2010; approximately 150 people were in attendance. A 45-day comment period following the notice in the Federal Register was scheduled to end on August 27, 2010; however, due to requests from the public, the BLM extended the comment period to September 27, 2010. The BLM received comments on the Draft EIS from a total of 173 parties.

Some comments received on the Draft EIS raised issues regarding the air quality analysis resulted in the development of an SDEIS (see Section 7.2 of this ROD). The NOA for the SDEIS was published in the Federal Register on June 10, 2011. The BLM mailed postcards notifying the public of the availability of the SDEIS on the BLM website or at the BLM Vernal Field Office to 342 interested parties, including the same distribution list used for the Draft EIS, attendees to the public meeting on the Draft EIS, and those who submitted comments on the Draft EIS. A 45-day comment period following the notice in the Federal Register ended on July 25, 2011. The BLM received comments on the SDEIS from a total of 6 parties.

In preparing the Final EIS, the BLM considered all comments. A description of the comment analysis and response process is presented in Section 6.2.2 of the Final EIS; unique substantive comments received and their associated responses are presented in Appendix P of the Final EIS.

7.7.3 Final EIS

An NOA was published in the Federal Register on April 6, 2012, announcing the availability of the Greater Natural Buttes Final EIS. During the 30-day waiting period (April 6, 2012, through May 7, 2012), the Vernal Field Office received a comment letter from the USEPA regarding the resolution of their concerns with the Draft EIS. A summary of their comments are listed in **Table 3**.

Table 3 USEPA Comments on the Final Environmental Impact Statement

Subject	Comment
General	The EPA appreciated the opportunity to work closely with the BLM in preparation of the Air Quality Supplement to the Draft EIS. We are pleased with the outcome of this effort and hope our collaboration can continue. The Final EIS addresses almost all the concerns we raised based on our review of the Draft EIS.

Table 3 USEPA Comments on the Final Environmental Impact Statement

Subject	Comment
Air Quality	<p>The Final EIS includes a thorough analysis of air quality and many applicant committed environmental protection measures to reduce air quality impacts. We strongly support the natural gas or liquid natural gas drilling rig engine pilot project. We also support the commitment to employ an adaptive management strategy to further reduce ozone precursor emissions if necessary in the future. We also understand and strongly support the commitment that the applicant committed BMPs and the adaptive management strategy for ozone impacts will be documented in the ROD, and we support the BLM's commitment to reevaluate the measures necessary to prevent adverse impacts to ozone in the Uinta Basin as additional information becomes available in the future.</p> <p>One notable difference between the Supplement and the Final EIS is that the revised air quality modeling for near-field impacts no longer shows predicted exceedances of the 1 hour NO₂ NAAQS. The EPA understands that this change is due to the use of revised modeling assumptions and updated modeling guidance in the Final EIS. The reason for the change would be apparent to a technical expert; however, for future NEPA projects we recommend that the Final EIS include a brief summary, in layman's terms, of the reason for the change.</p>
Water Resources	<p>The Final EIS includes a significantly improved characterization of both surface water and groundwater resources. These additions to the Final EIS provide a noticeably better understanding of the character of water resources and the potential impacts to water resources in the GNB project area. Another key addition to the Final EIS is the Long-Term Monitoring Plan for Water Resources, which greatly improves the BLM's ability to detect and mitigate unanticipated impacts. We strongly support the BLM for development of this plan, and offer our continued assistance for finalizing the monitoring network details.</p>
ROD and Permitting	<p>We wish to stress the importance of ensuring the Operator fully complies with the applicant committed BMPs and BLM mitigation requirements, and the BLM take its own steps to ensure mitigation through inspections and enforcement. We understand and support that the many important environmental protection measures discussed in the Final EIS will be documented in the ROD, developed into operating conditions during the site-specific permit approval process, and subsequently enforced.</p>

BMP – best management practice

One letter with substantive comments on the Final EIS was received during the 30-day waiting period. Comments and brief responses are included in **Table 4**.

Table 4 Comment Letters on the Final EIS

Name/ Organization	Comment	Response
Kerr McGee 1	<p>KMG seeks clarification by BLM in the Record of Decision (ROD) that the Birds Nest Aquifer monitoring will be implemented under the Quality Assurance Project Plan (QAPP) pursuant to Section 01.3 of Appendix O, and not pursuant to UIC permitting program administered by EPA. The NEPA mitigation objective to obtain comprehensive water quality and quantity data is met and, in fact, better served by consolidating the water monitoring requirements and obligations of KMG under one monitoring plan, the QAPP. Imposing a monitoring plan for each UIC Class II disposal well in the Birds Nest Aquifer would inappropriately exceed the regulatory requirements.</p>	<p>The Birds Nest Aquifer monitoring is intended to be tied to the QAPP. The results of the monitoring may inform the Underground Injection Control (UIC) permitting program, but is not intended to be integral to that program.</p>

Table 4 Comment Letters on the Final EIS

Name/ Organization	Comment	Response
Kerr McGee 2	The QAPP will be developed by KMG, and submitted to the BLM for approval. KMG respectfully requests that the BLM establish in the ROD a time-frame of no longer than 15 days to obtain outside agency input and a time-frame of no longer than 30-days to obtain BLM approval of the QAPP once the QAPP is submitted by KMG. FEIS Page 0-2 Appendix O.	The BLM will do its best to abide by the requested time frames; however approval by the USEPA is integral to this process and BLM cannot bind the USEPA or their resources to the requested time frames.
Kerr McGee 3	A three year cactus monitoring requirement in the FEIS was replaced by a more stringent requirement in the BO. The BO requires KMG to contribute to the Utah Sclerocactus mitigation fund for a period of 5 years in lieu of the required 3-year monitoring described above. FEIS Page 10 Appendix Q. The ROD should reflect that there is no requirement to monitor for 3 years as discussed on page M-4 of the FEIS.	The COAs disclose that the Biological Opinion for this project supersedes the BLM and USFWS conservation measures monitoring requirements for <i>Sclerocactus</i> .
Kerr McGee 4	The FEIS includes a mitigation measure of adherence to a minimum 300 feet buffer between the edge of disturbance and cactus plants or populations. However, as reflected in the BO, KMG and FWS agreed to mitigation measures that would allow surface disturbing activities within 300 feet. FEIS Page 9 Appendix Q. Again, KMG respectfully requests the BLM clarify that the BO governs the required mitigation measures, where inconsistent with the language of the FEIS.	The COAs disclose that the Biological Opinion for this project supersedes the BLM and USFWS conservation measures buffer distances for <i>Sclerocactus</i> .
Kerr McGee 5	KMG comments that KMG and FWS agreed during the consultation process that if Hookless cactus core conservation areas are approved and/or modified in the future, re-initiation of the consultation for the GNB project would not be necessary, as identified in SSS-3. KMG understands that re-initiation of formal consultation may occur if "new" information reveals effects not considered in the January 27, 2012 BO, or the GNB action is subsequently modified in a manner that results in effects not considered previously.	This mitigation measure was deleted because re-initiation of consultation based on new information on effects outside the original consultation is standard procedure. If the measures in this ROD are sufficient to mitigate impacts after the core conservation areas are finalized, then re-initiation will not be necessary.

In addition to the letters, the Vernal Field Office received several non-substantive e-mails. A summary of all letters and petitions and their contents is included in **Table 5**.

Table 5 Petition and Comment Letter Summary

Main Point	Number of Petitions and Letters
Opposed to fracking	1 e-mail
Supportive of the project in general	2 e-mails, and 1 letter from Anadarko

8.0 References

BLM. 2008. Vernal Field Office Record of Decision and Approved Resource Management Plan. BLM-UT-PL-09-003-1610. UT-080-2005-71. Vernal, Utah: DOI, BLM, Vernal Field Office.

_____. 1997. Bureau of Land Management Utah Public Lands Health Standards.