

**FINDING OF NO SIGNIFICANT IMPACT & DECISION RECORD
FOR
Williams Production RMT Company
Carr Draw Federal POD III West
ENVIRONMENTAL ASSESSMENT –WY-070-09-066**

DECISION: BLM’s decision is to approve alternative C and that portion of alternative D relative to conditions that will mitigate impacts to the Fortification Creek elk herd security habitat, as summarized below and described in the attached EA, and authorize Williams Production RMT Company’s Carr Draw Federal POD III West (CBNG) POD comprised of the following 104 Applications for Permit to Drill (APDs):

	Well Name	Well #	Qtr/Qtr	Section	TWP	RNG	Lease #
1	CARR DRAW III W CARU	14-2BG*	SWSW	2	50N	76W	WYW135623
2	CARR DRAW III W CARU	14-2W	SWSW	2	50N	76W	WYW135623
3	CARR DRAW III W CARU	23-2BG	NESW	2	50N	76W	WYW135623
4	CARR DRAW III W CARU	23-2GW	NESW	2	50N	76W	WYW135623
5	CARR DRAW III W CARU	12-3W	SWNW	3	50N	76W	WYW135623
6	CARR DRAW III W CARU	12-3BG	SWNW	3	50N	76W	WYW135623
7	CARR DRAW III W CARU	21-3GW	NENW	3	50N	76W	WYW135623
8	CARR DRAW III W CARU	21-3BG	NENW	3	50N	76W	WYW135623
9	CARR DRAW III W CARU	41-3BG	NENE	3	50N	76W	WYW135623
10	CARR DRAW III W CARU	41-3GW	NENE	3	50N	76W	WYW135623
11	CARR DRAW III W CARU	13-3BG	NWSW	3	50N	76W	WYW135623
12	CARR DRAW III W CARU	13-3BW	NWSW	3	50N	76W	WYW135623
13	CARR DRAW III W CARU	23-3BG	NESW	3	50N	76W	WYW135623
14	CARR DRAW III W CARU	23-3W	NESW	3	50N	76W	WYW135623
15	CARR DRAW III W CARU	32-3BG	SWNE	3	50N	76W	WYW135623
16	CARR DRAW III W CARU	32-3W	SWNE	3	50N	76W	WYW135623
17	CARR DRAW III W CARU	34-3W	SWSE	3	50N	76W	WYW135623
18	CARR DRAW III W CARU	34-3BG	SWSE	3	50N	76W	WYW135623
19	CARR DRAW III W CARU	43-3BG	NESE	3	50N	76W	WYW135623
20	CARR DRAW III W CARU	43-3W	NESE	3	50N	76W	WYW135623
21	CARR DRAW III W CARU	34-9BG	SWSE	9	50N	76W	WYW154405
22	CARR DRAW III W CARU	34-9LW	SWSE	9	50N	76W	WYW154405
23	CARR DRAW III W CARU	14-9BG	SWSW	9	50N	76W	WYW154405
24	CARR DRAW III W CARU	14-9LW	SWSW	9	50N	76W	WYW154405
25	CARR DRAW III W CARU	23-9BG	NESW	9	50N	76W	WYW154405
26	CARR DRAW III W CARU	23-9LW	NESW	9	50N	76W	WYW154405
27	CARR DRAW III W CARU	43-9BG	NESE	9	50N	76W	WYW154405

	Well Name	Well #	Qtr/Qtr	Section	TWP	RNG	Lease #
28	CARR DRAW III W CARU	43-9W	NESE	9	50N	76W	WYW154405
29	CARR DRAW III W CARU	41-10BG	NENE	10	50N	76W	WYW135623
30	CARR DRAW III W CARU	41-10W	NENE	10	50N	76W	WYW135623
31	CARR DRAW III W CARU	42-10BG	SENE	10	50N	76W	WYW135623
32	CARR DRAW III W CARU	42-10W	SENE	10	50N	76W	WYW135623
33	CARR DRAW III W CARU	14-10BG	SWSW	10	50N	76W	WYW154405
34	CARR DRAW III W CARU	14-10W	SWSW	10	50N	76W	WYW154405
35	CARR DRAW III W CARU	21-10BG	NENW	10	50N	76W	WYW154405
36	CARR DRAW III W CARU	21-10W	NENW	10	50N	76W	WYW154405
37	CARR DRAW III W CARU	32-10BG	SWNE	10	50N	76W	WYW135623
38	CARR DRAW III W CARU	32-10W	SWNE	10	50N	76W	WYW135623
39	CARR DRAW III W CARU	11-10BG	NWNW	10	50N	76W	WYW154405
40	CARR DRAW III W CARU	11-10W	NWNW	10	50N	76W	WYW154405
41	CARR DRAW III W CARU	21-11BG	NENW	11	50N	76W	WYW135623
42	CARR DRAW III W CARU	21-11W	NENW	11	50N	76W	WYW135623
43	CARR DRAW III W CARU	44-11BG	SESE	11	50N	76W	WYW135623
44	CARR DRAW III W CARU	44-11W	SESE	11	50N	76W	WYW135623
45	CARR DRAW III W CARU	22-11BG	SENE	11	50N	76W	WYW135623
46	CARR DRAW III W CARU	22-11W	SENE	11	50N	76W	WYW135623
47	CARR DRAW III W CARU	34-11BG	SWSE	11	50N	76W	WYW135623
48	CARR DRAW III W CARU	34-11W	SWSE	11	50N	76W	WYW135623
49	CARR DRAW III W CARU	43-11BG	NESE	11	50N	76W	WYW135623
50	CARR DRAW III W CARU	43-11W	NESE	11	50N	76W	WYW135623
51	CARR DRAW III W CARU	34-14BG	SWSE	14	50N	76W	WYW135623
52	CARR DRAW III W CARU	34-14W	SWSE	14	50N	76W	WYW135623
53	CARR DRAW III W CARU	22-14BG	SENE	14	50N	76W	WYW135623
54	CARR DRAW III W CARU	22-14W	SENE	14	50N	76W	WYW135623
55	CARR DRAW III W CARU	31-14BG	NWNE	14	50N	76W	WYW135623
56	CARR DRAW III W CARU	31-14W	NWNE	14	50N	76W	WYW135623
57	CARR DRAW III W CARU	11-14BG	NWNW	14	50N	76W	WYW135623
58	CARR DRAW III W CARU	11-14W	NWNW	14	50N	76W	WYW135623
59	CARR DRAW III W CARU	23-14BG	NESW	14	50N	76W	WYW154405
60	CARR DRAW III W CARU	23-14W	NESW	14	50N	76W	WYW154405
61	CARR DRAW III W CARU	43-14BG	NESE	14	50N	76W	WYW135623
62	CARR DRAW III W CARU	43-14W	NESE	14	50N	76W	WYW135623
63	CARR DRAW III W CARU	12-15BG	SWNW	15	50N	76W	WYW56118

	Well Name	Well #	Qtr/Qtr	Section	TWP	RNG	Lease #
64	CARR DRAW III W CARU	12-15W	SWNW	15	50N	76W	WYW56118
65	CARR DRAW III W CARU	42-15BG	SENE	15	50N	76W	WYW154405
66	CARR DRAW III W CARU	42-15W	SENE	15	50N	76W	WYW154405
67	CARR DRAW III W CARU	14-15BG	SWSW	15	50N	76W	WYW56118
68	CARR DRAW III W CARU	14-15W	SWSW	15	50N	76W	WYW56118
69	CARR DRAW III W CARU	41-15BG	NENE	15	50N	76W	WYW154405
70	CARR DRAW III W CARU	41-15W	NENE	15	50N	76W	WYW154405
71	CARR DRAW III W CARU	33-15BG	NWSE	15	50N	76W	WYW154405
72	CARR DRAW III W CARU	33-15W	NWSE	15	50N	76W	WYW154405
73	CARR DRAW III W CARU	31-22BG	NWNE	22	50N	76W	WYW92963
74	CARR DRAW III W CARU	31-22W	NWNE	22	50N	76W	WYW92963
75	CARR DRAW III W CARU	12-22BG	SWNW	22	50N	76W	WYW040443D
76	CARR DRAW III W CARU	12-22LW	SWNW	22	50N	76W	WYW040443D
77	CARR DRAW III W CARU	21-22BG	NENW	22	50N	76W	WYW040443C
78	CARR DRAW III W CARU	21-22W	NENW	22	50N	76W	WYW040443C
79	CARR DRAW III W CARU	32-22BG	SWNE	22	50N	76W	WYW040443C
80	CARR DRAW III W CARU	32-22W	SWNE	22	50N	76W	WYW040443C
81	CARR DRAW III W CARU	21-23BG	NENW	23	50N	76W	WYW146290
82	CARR DRAW III W CARU	21-23W	NENW	23	50N	76W	WYW146290
83	CARR DRAW III W CARU	23-23W	NESW	23	50N	76W	WYW146290
84	CARR DRAW III W CARU	23-23BG	NESW	23	50N	76W	WYW146290
85	CARR DRAW III W CARU	42-23BG	SENE	23	50N	76W	WYW146290
86	CARR DRAW III W CARU	42-23W	SENE	23	50N	76W	WYW146290
87	CARR DRAW III W CARU	12-23BG	SWNW	23	50N	76W	WYW146290
88	CARR DRAW III W CARU	12-23W	SWNW	23	50N	76W	WYW146290
89	CARR DRAW III W CARU	14-23BG	SWSW	23	50N	76W	WYW146290
90	CARR DRAW III W CARU	14-23W	SWSW	23	50N	76W	WYW146290
91	CARR DRAW III W CARU	22-23BG	SENE	23	50N	76W	WYW146290
92	CARR DRAW III W CARU	22-23W	SENE	23	50N	76W	WYW146290
93	CARR DRAW III W CARU	12-26BG	SWNW	26	50N	76W	WYW040444A
94	CARR DRAW III W CARU	12-26W	SWNW	26	50N	76W	WYW040444A
95	CARR DRAW III W CARU	12-27BG	SWNW	27	50N	76W	WYW33138
96	CARR DRAW III W CARU	12-27W	SWNW	27	50N	76W	WYW33138
97	CARR DRAW III W CARU	41-27BG	NENE	27	50N	76W	WYW040444A
98	CARR DRAW III W CARU	41-27W	NENE	27	50N	76W	WYW040444A
99	CARR DRAW III W CARU	21-27BG	NENW	27	50N	76W	WYW040444A

	Well Name	Well #	Qtr/Qtr	Section	TWP	RNG	Lease #
100	CARR DRAW III W CARU	21-27W	NENW	27	50N	76W	WYW040444A
101	CARR DRAW III W CARU	43-27W	NESE	27	50N	76W	WYW040444A
102	CARR DRAW III W CARU	33-27BG	NWSE	27	50N	76W	WYW040444A
103	CARR DRAW III W CARU	33-27W	NWSE	27	50N	76W	WYW040444A
104	CARR DRAW III W CARU	43-27BG	NESE	27	50N	76W	WYW040444A

This approval is subject to adherence with all of the operating plans and mitigating measures contained in the master surface use plan of operations, drilling plan, water management plan, and information in individual APDs. This approval is also subject to operator compliance with all mitigation and monitoring requirements contained within the *Powder River Oil and Gas Project Final Environmental Impact Statement and Resource Management Plan Amendment (PRB FEIS)* approved April 30, 2003.

The following wells have been deferred due to resource conflicts.

	Well Name	Well #	Qtr/Qtr	Section	TWP	RNG	Lease #
1	CARR DRAW III W CARU	14-10BG	SWSW	10	50N	76W	WYW154405
2	CARR DRAW III W CARU	14-10W	SWSW	10	50N	76W	WYW154405
3	CARR DRAW III W CARU	11-14BG	NWNW	14	50N	76W	WYW135623
4	CARR DRAW III W CARU	11-14W	NWNW	14	50N	76W	WYW135623
5	CARR DRAW III W CARU	41-15BG	NENE	15	50N	76W	WYW154405
6	CARR DRAW III W CARU	41-15W	NENE	15	50N	76W	WYW154405
7	CARR DRAW III W CARU	42-15BG	SENE	15	50N	76W	WYW154405
8	CARR DRAW III W CARU	42-15W	SENE	15	50N	76W	WYW154405

The following access road, infrastructure and associated facilities are not being approved as proposed.

	Infrastructure/facility	Qtr/Qtr	Section	TWP	RNG
1	Access road from the 43-9 to the proposed 14-10 well location	NESE	9	50N	76W
		SWSW	10		
2	Access road and pipeline corridor to the proposed 41-15 well location	NENE	15	50N	76W
3	Access road and pipeline corridor to the proposed 11-14 well location	SWNW & NWNW	14	50N	76W
4	Access road and pipeline corridor from the access to the 22-14 well location to the proposed 42-15 well location	SENE	15	50N	76W
		SWNW & SENW	14		

This approval is subject to adherence with all of the operating plans and mitigation measures contained in the Master Surface Use Plan of Operations, Drilling Plan, Water Management Plan, and information in individual APDs. This approval is also subject to operator compliance with all mitigation and monitoring requirements contained within the *Powder River Oil and Gas Project Final Environmental Impact Statement and Resource Management Plan Amendment (PRB FEIS)* approved April 30, 2003.

Summary of Alternative C and D:

Alternative D includes appropriate components of Alternatives C and additional project modifications as described in the EA that will alleviate site specific impacts to elk and their habitats.

The following items summarize the components of Alternative C included in Alternative D:

1. The following 8 wells (4 locations and supporting infrastructure) were deferred :

	Well Name	Well #	Qtr/Qtr	Section	TWP	RNG	Lease #
1	CARR DRAW III W CARU	14-10BG	SWSW	10	50N	76W	WYW154405
2	CARR DRAW III W CARU	14-10W	SWSW	10	50N	76W	WYW154405
3	CARR DRAW III W CARU	11-14BG	NWNW	14	50N	76W	WYW135623
4	CARR DRAW III W CARU	11-14W	NWNW	14	50N	76W	WYW135623
5	CARR DRAW III W CARU	41-15BG	NENE	15	50N	76W	WYW154405
6	CARR DRAW III W CARU	41-15W	NENE	15	50N	76W	WYW154405
7	CARR DRAW III W CARU	42-15BG	SENE	15	50N	76W	WYW154405
8	CARR DRAW III W CARU	42-15W	SENE	15	50N	76W	WYW154405

RATIONALE

The decision to authorize alternative C and that portion of alternative D as described in the attached Environmental Assessment (EA), is based on the following:

1. The Operator, in their POD, has committed to:
 - Comply with all applicable Federal, State and Local laws and regulations.
 - Obtain the necessary permits from other agencies for the drilling, completion and production of these wells including water rights appropriations, the installation of water management facilities, water discharge permits, and relevant air quality permits.
 - Offer water well agreements to the owners of record for permitted water wells within ½ mile of a federal CBNG producing well in the POD.
 - Provide water analysis from a designated reference well in each coal zone.
2. The Operator has secured a 3814 Bond.
3. The selected alternative will not result in any undue or unnecessary environmental degradation.
4. It is in the public interest to approve this development to help meet the nation’s future needs for energy reserves and reduce the U.S. dependence on foreign sources of energy. It also helps to stimulate local economies by maintaining stability for the workforce.
5. Mitigation measures identified under the selected alternative and applied by the BLM will alleviate or minimize environmental impacts.
6. Elk displacement is anticipated to be temporary, with complete displacement during the drilling and construction phases, followed by 50% of the elk returning during the production phase.
7. The selected alternative was developed with the recognition that many of the project components modified to mitigate elk impacts may also benefit sage-grouse, and that portions of the analyzed alternatives did not correspond to the desires of the surface owner in the project area. Mitigating measures were selected from the range of alternatives in this context to best meet the purpose and need.
8. The selected alternative incorporates appropriate local sage-grouse research and the best available science from across the species’ range in development of conditions of approval attached.

Mitigating measures applied by the BLM will lessen environmental impacts to sage-grouse.

- a. Surface-disturbing activities will be restricted during sage-grouse and elk breeding and nesting periods (March 1 to June 15). This condition will be implemented on an annual basis for the life of the project. See Appendix 1 for areas where the timing limit applies.

Mitigating measures applied by the BLM will lessen environmental impacts to elk.

- b. The operator will be required to monitor and record the frequency of site visits to individual wells and facilities for the first six months of production immediately following construction of the wells and facilities. These reports will be submitted by the operator at the end of each month to

the BLM BFO. The monthly reports will include: The reason for the well visit, any problems identified, any repairs or actions made during the well visits, the date, time, and duration of the well visit. Actions that are covered under 43 CFR 3162.3-2 (a) Subsequent well operations, as they will be submitted through sundry. At the end of the six month reporting period the operator will submit a travel plan based on the well reports to be approved by the BLM BFO.

- c. A timing limitation will be placed on surface disturbing activities within identified elk crucial winter range November 15 to April 30 and elk parturition range May 1 to June 30 for the life of the project.
 - d. The operator will be required to submit a monthly work report that in conjunction with monitoring the collared elk will enable elk responses to be evaluated for possible adaptive management alternatives development.
9. Approval of this alternative is in conformance with the PRB-FEIS, and the Approved Resource Management Plan for the Public Lands Administered by the Bureau of Land Management, Buffalo Field Office, April 2001 (refer to Appendix E of that document relative to adaptive management).
 10. The selected alternative incorporates components of the Wyoming Governor's Sage Grouse Implementation Team's "core population area" strategy and executive order and local research to provide appropriate protections for sage-grouse, while meeting the purpose and need for the Carr Draw III West project (WYGF, 2009).

FINDING OF NO SIGNIFICANT IMPACT

Based on the analysis of the potential environmental impacts, I have determined that NO significant impacts are expected from the implementation of the selected alternative and, therefore, an environmental impact statement is not required.

In conformance with Appendix E, *Record of Decision, Powder River Oil and Gas Project Environmental Impact Statement and Resource Management Plan Amendment* BLM Buffalo Field Office has initiated actions within the PRB FEIS analysis area in response to additional information regarding impacts to sage-grouse. These measures include:

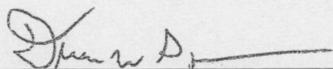
1. Early initiation of a Resource Management Plan (RMP) revision, based on the evaluation of monitoring data generated under the mitigation monitoring and reporting plan (MMRP) in the PRBFEIS Record of Decision
2. Establishment of sage-grouse "focus" areas, encompassing approximately 1 million acres of sage-grouse habitat. These areas are managed under strict guidelines designed to preserve sage-grouse habitat for development of alternatives during the RMP process (Appendix B).
3. Initiation of a population viability analysis in the Powder River Basin. This is a 24-month project involving the USGS, BLM Miles City Field Office, BLM Buffalo Field Office, and the University of Montana.
4. Development of alternatives that modify the proposed action to reflect the best available science in sage-grouse management.
5. Development of conditions of approval, specific to sage-grouse management, that incorporate recommendations from recent research, the Northeast Local Sage-grouse Working Group, the Wyoming Game and Fish Department (WGFD), BLM, and the Petroleum Association of Wyoming.

The implementation of the selected alternative best meets the stated purpose and need for the proposed action. With the application of mitigating measures associated with Alternative D, there's an increased probability that sage-grouse population viability in the Powder River Basin will not be compromised, due to the larger scope of planning actions and research initiated by the BLM BFO.

ADMINISTRATIVE REVIEW AND APPEAL: Under BLM regulations, 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, Wyoming 82003, no later than 20 business days after this Decision Record is received or considered to have been received.

Any party who is adversely affected by the State Director's decision may appeal that decision to the Interior Board of Land Appeals, as provided in 43 CFR 3165.4.

Field Manager: _____



Date: _____

9/4/09

**BUREAU OF LAND MANAGEMENT
BUFFALO FIELD OFFICE
ENVIRONMENTAL ASSESSMENT (EA)
FOR
Williams Production RMT Company
Carr Draw Federal POD III West
PLAN OF DEVELOPMENT
WY-070-09-066**

Introduction

This environmental assessment (EA) was prepared by the Bureau of Land Management (BLM) to address site specific analysis conducted by the Buffalo Field Office (BFO). Williams Production RMT Company proposed the Carr Draw Federal POD III West Project of Development (POD) for coal-bed methane gas (CBNG) wells on 80 acre spacing with essential infrastructure (roads, power, water and gas pipelines) for development in the Powder River Basin (PRB) of Campbell County, Wyoming, Township 50 North and Range 76 West.

The EA details site specific impacts of the proposed Carr Draw Federal POD III West. This process of analysis determines how and under what conditions the leaseholder will develop oil and gas resources on the federal leases.

Background

The PRB expands from the gently rolling hills on the eastern portion of the basin to the Powder River breaks area toward the Big Horn Mountains on the west side of the basin. Due to the nature of the coal seams in the PRB, placement of production facilities, well housing, reservoirs and compressor stations can be located in less environmentally sensitive areas during the planning stages of development.

1. PURPOSE AND NEED

The purpose of this action is to extract coal-bed methane natural gas (CBNG) with wells drilled on 80 acre spacing as a Project of Development (Appendix A) on federal oil and gas leases issued to the applicant by the BLM. There is a need to analyze the entire project area to thoroughly ascertain the operator's needs, calculate disturbance, and apply effective mitigation to protect multiple resources.

The purpose and need of this EA is to determine how and under what conditions to allow Williams Production RMT Company to exercise lease rights granted by the United States to develop the oil and gas resources on federal leaseholds as described in their proposed action.

Development of the Carr Draw Federal POD III West wells would return royalties to the Federal Treasury as well as stimulate local economies.

Agency Responsibilities

Federal mineral royalties are directed to the State of Wyoming and to the United States Federal Treasury. Due to the underlying lateral continuity of the coal seams, Federal oil and gas can be drained by neighboring oil and gas development. Concurrent development of Federal minerals avoids drainage by private entities and protects financial interests of the State of Wyoming and the United States.

BLM recognizes extraction of oil and gas resources plays an essential role in meeting the nation's need for energy resources. As a result, private exploration and development of the Federal reserve are integral in the agencies' oil and gas leasing program under the authority of the Mineral Leasing Act of 1920, as

amended, and the Federal Land Policy Management Act (FLPMA) of 1976. The oil and gas leasing program, managed by BLM, encourages the development of domestic energy production and provides mitigation measures to protect multiple resources.

1.1. Conformance with Applicable Land Use Plan and Other Environmental Assessments:

The proposed action conforms to the terms and the conditions of the 1985 Buffalo RMP and the PRB FEIS, as required by 43 CFR 1610.5. The BFO RMP is currently under revision.

For the RMP revision, BFO established Focus Areas with rigorous interim protections in order to preserve “decision space” during the revision process. Outside the Focus Areas, BFO continues to apply appropriate, but far less rigorous, site-specific mitigating measures for high-quality sage-grouse habitat with well densities up to 80-acre spacing and may include site-specific mitigating measures suggested by the best available science. Actions within BFO Focus Areas will be limited to impacts consistent with 640 acre spacing, and must have a plan of development that demonstrates that the proposal can be managed in a manner that effectively conserves sage-grouse habitats (in Focus Areas) affected by the proposal.

The Carr Draw Federal POD III West does not occur within a core or focus area. However, high quality sage-grouse habitat, as indicated by the University of Montana model, occurs within the project area.

2. ALTERNATIVES INCLUDING THE PROPOSED ACTION

Four alternatives, A, B, C and D, were evaluated in determining how to best meet the stated purpose and need of the proposed action. A brief description of each alternative follows. For the complete detailed description of each alternative, including the alternatives considered but not analyzed in detail, see Appendix A.

2.1. Alternative A - No Action

A No Action Alternative was considered in the PRB FEIS, Volume 1, pages 2-54 through 2-62. This alternative would consist of no new federal wells. An oil and gas lease grants the lessee the “right and privilege to drill for, mine, extract, remove, and dispose of all oil and gas deposits” in the lease lands, “subject to the terms and conditions incorporated in the lease.” Thus, under this alternative, the operator’s proposal would be denied.

2.2. Alternative B Proposed Action

Alternative B, the “proposed action” alternative, summarizes the Carr Draw Federal POD III West Project as originally submitted to the BLM by Williams Production RMT Company, prior to any BLM review or modifications.

The specific changes identified for the Carr Draw Federal POD III West are described in detail in Appendix A.

2.3. Alternative C – Modified Proposed Action

Alternative C represents a modification of Alternative B based on the operator and BLM working cooperatively to reduce environmental impacts. The description of Alternative C is the same as Alternative B with the addition of the project modifications of the initial project proposal (Alternative B) identified by BLM and the operator. At the on-sites, all areas of proposed surface disturbance were inspected to insure that the project would meet BLM multiple use objectives to conserve natural resources while allowing for the extraction of Federal minerals. In some cases, access roads were re-routed, and well locations, pipelines, discharge points and other water management control structures were moved, modified, mitigated or dropped from further consideration to alleviate environmental impacts.

Alternatives to the different aspects of the proposed action are always considered and applied as pre-approval changes, site specific mitigation and/or Conditions of Approval (COAs), if they will alleviate environmental effects of the operator's proposal.

Alternative C also incorporates the results of sage-grouse habitat mapping efforts in the project area and on-site verification of habitat suitability. This alternative represents BFO efforts to reduce project-specific impacts to elk security habitat, while maintaining proposed spacing and infrastructure requirements consistent with the purpose and need of the proposed action.

The specific changes identified for the Carr Draw Federal POD III West are described in detail in Appendix A.

2.4. Alternative D- Elk Emphasis

Alternative D represents a modification of Alternative C based on the application of mitigating measures designed to reduce impacts to elk and their habitats. Alternative D is the same as Alternative C with the addition of the project-level modifications identified by BLM, guided by several years of elk research in the project area and additional studies from across the species' range. Alternative D represents BFO efforts to reduce project-specific impacts to elk habitat, while maintaining proposed spacing and infrastructure requirements consistent with the purpose and need of the proposed action.

In conjunction with project-level modifications, site-specific measures applied for specific wells and infrastructure would maintain open corridors for elk, provide contiguous habitat patches, and reduce disturbance in and adjacent to elk security habitat.

This alternative incorporates mitigation designed around site-specific habitat characteristics to minimize habitat fragmentation and accelerate return to habitat effectiveness at reclamation.

The specific changes identified for the Carr Draw Federal POD III West are described in detail in Appendix A.

2.5. Alternatives considered but not analyzed in detail

Alternatives considered but not analyzed in detail for the Carr Draw Federal POD III West are described in detail, if applicable, in Appendix A.

3. DESCRIPTION OF AFFECTED ENVIRONMENT

This section describes the environment that would be affected by implementation of the Alternatives described in Section 2. Aspects of the affected environment described in this section focus on the relevant major issues.

Applications to drill were received on May 30, 2008. Field inspections of the proposed Carr Draw Federal POD III West CBNG project were conducted on 12/9-11/2008, 12/18/2008, and 1/6/2009 by the following:

DATE	NAME	Agency	Title
12/9,10,11,18/2008&1/6/2009	Allen Aksamit	Western Land Services	Wildlife Biologist
12/9,10,11,18/2008	Rich Kintzi	Western Land Services	General Manager
12/9/2008	Megan Crow	MC2	PE
12/9,10,11,18/2008&1/6/	Duane Joslyn	Williams Production RMT CO	Construction Manager

DATE	NAME	Agency	Title
2009			
12/9,10,11,18/2008	Penny Bellah	Williams Production RMT CO	Reg. Team Lead
12/9,10,11,/2008	Scott Mortens	Williams Production RMT CO	Operation Supervisor
12/9,10,11,18/2008&1/6/2009	Dan King	Western Land Services	Operations
12/9,10,11,18/2008&1/6/2009	Mike Lindsley	Western Land Services	Operations
12/9,10,11,18/2008	Billy Maycock	Land Owner	
12/9,10,11,18/2008	Rex Lynde	Williams Production RMT CO	Drilling Supervisor
12/9,10,11,/2008	Sandy Nelson	Williams Production RMT CO	Land Manager
12/9,10,11,18/2008	Kelsy Gonzales	Western Land Services	Natural Resource Specialists
12/9,10,11,/2008	Chuck Ross	BLM	P.E.T
12/9,10,11,18/2008&1/6/2009	Jennifer Morton	BLM	Wildlife Biologist
12/9,10,11,18/2008	Jennifer Spegon	BLM	NRS
12/9,10,11,18/2008&1/6/2009	Andy Perez	BLM	NRS
12/9,10,11,18/2008&1/6/2009	Jerry Means	Magna	Dirt Work Contractor

Certain critical environmental components require analysis under BLM policy. These items are presented below in Table 3.1.

Table 3.1 - Critical elements requiring mandatory evaluation are presented below.

Mandatory Item	Potentially Impacted	No Impact	Not Present On Site	BLM Evaluator
Threatened and Endangered Species		X		Jennifer Morton
Floodplains		X		Casey Freise
Wilderness Values		X		Andy Perez
ACECs			X	Andy Perez
Water Resources		X		Casey Freise
Air Quality	X			Andy Perez
Cultural or Historical Values	X			Clint Crago
Prime or Unique Farmlands		X		Andy Perez
Wild & Scenic Rivers		X		Andy Perez
Wetland/Riparian		X		Casey Freise
Native American Religious Concerns			X	Clint Crago
Hazardous Wastes or Solids		X		Andy Perez
Invasive, Nonnative Species	X			Andy Perez
Environmental Justice		X		Andy Perez

3.1. Topographic Characteristics of Project Area

The project area is located approximately 38 miles east of Buffalo, Wyoming on Interstate 90 in west-

central Campbell County. The topography consists of rugged and moderately rugged terrain with ridges, deep draws, and rough breaks. The elevation within the project area ranges from approximately 4200 to 4800 feet above sea level. Livestock grazing has been the primary historic land use within the project area.

3.2. Vegetation & Soils

Species typical of short grass prairie comprise the project area flora. Three major vegetation and habitat types occur within the project area including Mixed-grass prairie, Sagebrush steppe, and Juniper woodland. Differences in dominant species within the project area vary with soil type, aspect and topography. The dominant species include Wyoming big sagebrush (*Artemisia tridentata* var. *wyomingensis*) and big sagebrush (*Artemisia tridentata*) mixed with various types of grasses as well as some rocky mountain juniper (*Juniperus scopulorum*). Ponderosa pine and cedar also occur throughout the project area.

3.2.1. Soils

This area is in the Missouri Plateau, Unglaciated, Section of the Great Plains Province of the Interior Plains. It is an area of old plateaus and terraces that have been deeply eroded. Typically, local relief is about 150 to 250 feet. Slopes generally are gently rolling to steep and wide belts of steeply sloping badlands border a few of the larger drainage valleys. Soils have developed in alluvium and residuum derived from the Wasatch Formation. Lithology consists of light to dark yellow and tan siltstone and sandstones with minor coal seams, resulting in a wide variety of surface and subsurface textures. Soils differ with topographic location, slope and elevation. Topsoil depths to be salvaged for reclamation range from 2 to 4 inches on ridges to 8+ inches in bottomland. The main soil limitations in the project area include: depth to bedrock, low organic matter content, and high erosion potential especially in areas of steep slopes.

Soils within the project area were identified from the *North Johnson County Soil Survey Area, Wyoming (WY719)*. The soil survey was performed by the Natural Resource Conservation Service according to National Cooperative Soil Survey standards. The BLM uses soil survey information to predict soil behavior, limitations, or suitability for a given activity or action. The agencies long term goal for soil resource management is to maintain, improve, or restore soil quality. Soil management objectives are to ensure that adequate soil protection is consistent with the resource capabilities.

Many of the soils and landforms of this area present distinct challenges for development, and /or eventual site reclamation. Soil erosion potential is mostly severe throughout the project area, (64% of the project area) depending on the soil type, vegetative cover and slope. Twenty-nine percent of the area has slopes greater than 25%, and 81% of the POD area is comprised of soils having poor reclamation suitability, making reclamation challenging if not impossible.

The proponent planned their project and the BLM made further recommendations on the onsite to avoid those areas as per FEIS-ROD. Disturbances approved within these areas require the programmatic/ standard COA's be enhanced with a site specific performance based stabilization/reclamation COA. Overcoming unfavorable soil and site properties or limitations will require special design, extra maintenance, and costly alterations.

The soil map units within this project area were filtered. Only map units representing 4.0% or greater in extent, within the POD boundary, are displayed. These dominant soil map units are listed in the table below with their individual acreage and percentage of the area within the POD boundary.

Table 3.2 Dominant soils affected by the proposed action include:

Map Unit	Map Unit Name	Acres	%
204	SAMDAY-SAMDAY, COOL-SHINGLE CLAY LOAMS, 6 TO 40 PERCENT SLOPES	3176.0	54%
217	THEEDLE-SHINGLE LOAMS, 3 TO 30 PERCENT SLOPES	947.1	16%
206	SAMDAY-SHINGLE-BADLAND COMPLEX, 10 TO 45 PERCENT SLOPES	494.2	8%
215	THEEDLE-KISHONA LOAMS, 6 TO 20 PERCENT SLOPES	361.5	6%
147	FORKWOOD-CUSHMAN LOAMS, 6 TO 15 PERCENT SLOPES	335.2	6%
153	HAVERDAD-KISHONA ASSOCIATION, 0 TO 6 PERCENT SLOPES	176.5	3%

For more detailed soil information, see the NRCS Soil Survey 719 – North Johnson County. Additional site specific soil information is included in the Ecological Site interpretations.

3.2.2. Vegetation

The map unit symbols for the soils identified above and the associated ecological sites for the identified soil map unit symbols found within the POD boundary are listed in table 3.3 below. NRCS Ecological Site Descriptions are used to provide site and vegetation information for resource identification, management and reclamation recommendations. To determine the appropriate Ecological Sites for the area contained within this proposed action, BLM specialists analyzed data from onsite field reconnaissance and NRCS published soil survey soils information. Dominate Ecological Sites and Plant Communities identified in this POD, including wells, facilities and infrastructure are predominately Shallow Clayey and Loamy sites.

Shallow Clayey Sites occur on nearly level to steep slopes on landforms which include hill sides, ridges and escarpments in the 10-14”precipitation zone. The soils of this site are shallow (less than 20” to bedrock), well-drained soils that formed in alluvium or alluvium over residuum derived from unspecified shale. These soils have moderate to slow permeability. The bedrock is clay shale which is virtually impenetrable to plant roots. The present plant community is a Mixed Sagebrush/Grass. Wyoming big sagebrush is a significant component of this plant community. Cool-season grasses make up the majority of the understory with the balance made up of short warm-season grasses, annual cool-season grass, and miscellaneous forbs. Dominant grasses include rhizomatous wheatgrasses, and green needlegrass. Other grasses include blue grama, prairie junegrass, and Sandberg bluegrass. Forbs, commonly found in this plant community, include Louisiana sagewort (cudweed), plains wallflower, hairy goldaster, slimflower scurfpea, and scarlet globemallow. Fringed sagewort is commonly found. Plains pricklypear and winterfat can also occur.

Loamy Sites occur on gently undulating to rolling land on landforms which include hill sides, alluvial fans, ridges and stream terraces, in the 10-14 inch precipitation zone. These soils are moderately deep to very deep (greater than 20" to bedrock), well drained soils that formed in alluvium and residuum derived from sandstone and shale. These soils have moderate permeability. The present plant community is a Mixed Sagebrush/Grass. Wyoming big sagebrush is a significant component of this Mixed Sagebrush/Grass plant community. Cool-season mid-grasses make up the majority of the understory with the balance made up of short warm-season grasses, annual cool-season grass, and miscellaneous forbs. Dominate vegetation include needleandthread, western wheatgrass, green needlegrass, blue grama, prairie junegrass and Sandberg bluegrass. Other grasses occurring on the state include Cusick’s and Sandberg bluegrass, and prairie junegrass. Other vegetative species identified at onsite include pricklypear and fringed sagewort.

The map unit symbols for the soils identified above and the associated ecological sites for the identified soil map unit symbols found within the POD boundary are listed in the table below.

Table 3.3 Map Units and Ecological Sites:

Map Unit	Ecological Site
204	SHALLOW CLAYEY (10-14 NP)
217	LOAMY (10-14 NP)
206	SHALLOW CLAYEY (10-14 NP)
215	LOAMY (10-14 NP)
147	LOAMY (10-14 NP)
153	LOWLAND (10-14 NP)

A summary of the ecological sites within the project area are listed in the table below along with the individual acreage and the percentage of the total area identified within the POD boundary.

Table 3.4 Summary of Ecological Sites

Ecological site	Acres	Percent
SHALLOW CLAYEY (10-14 NP)	3670.2	62%
LOAMY (10-14 NP)	1902.7	32%
LOWLAND (10-14 NP)	176.5	3%
Misc. Gullied	128.1	2%
SANDY (10-14 NP)	51.8	1%

3.2.3. Wetlands/Riparian

Development within the proposed Carr Draw III West plan of development will occur within the middle reaches of the Barber Creek watershed. Barber Creek, under natural conditions, qualifies as an ephemeral stream. Very little riparian vegetation exists adjacent the stream channel or in the floodplain. Sparse populations of cottonwood trees can be found along Barber Creek.

3.2.4. Invasive Species

State-listed noxious weeds and invasive/exotic plant infestations were discovered by a search of inventory maps and/or databases or during subsequent field investigation by the proposed project proponent and the BLM.

Specific species of concern include:

- Canada thistle, which was found and identified in channel bottoms throughout the entire POD.
- Scotch thistle, which was identified and found near existing roads and oil infrastructure throughout the POD.
- Leafy spurge was found and identified within the channel bottom in SENW section 21.
- Cheat grass has invaded the state of Wyoming, and has been identified occurring throughout the project area.

The operator has developed an Integrated Weed and Pest Management Plan as well as mapped existing weed infestations for education and control of noxious weeds within this project.

The state-listed noxious weeds are listed in PRB FEIS Table 3-21 (p. 3-104) and the Weed Species of Concern are listed in Table 3-22 (p. 3-105).

3.3. Wildlife

Several resources were consulted to identify wildlife species that may occur in the proposed project area. Resources that were consulted include the wildlife database compiled and managed by the BLM Buffalo Field Office (BFO) wildlife biologists, the PRB FEIS, the Wyoming Game and Fish Department (WGFD) big game and sage-grouse maps, and the Wyoming Natural Diversity Database (WYNDD).

A habitat assessment and wildlife inventory surveys were performed by Western Land Services (WLS) (2005, 2006, 2007, 2008, 2009). WLS performed surveys for mountain plover, sharp-tailed grouse, greater sage-grouse, raptor nests, and prairie dog colonies according to Powder River Basin Interagency Working Group (PRBIWG) accepted protocol in 2005, 2006, 2007, 2008, and 2009. Surveys were conducted for Ute ladies'-tresses orchid and Blowout penstemon. PRBIWG accepted protocol is available on the CBM Clearinghouse website (www.cbmclearinghouse.info).

A BLM biologist conducted field visits on July 10-14, 17-21, 2006, December 9-11, 18, 2008 and January 6, 2009. During this time, the biologist reviewed the wildlife survey information for accuracy, evaluated impacts to wildlife resources, and provided project modification recommendations where wildlife issues arose.

Wildlife species common to the habitat types present are identified in the PRB FEIS (pg. 3-114). Species that have been identified in the project area or that have been noted as being of special importance are described below.

3.3.1. Big Game

Big game species expected to be within the Carr Draw III West project area include pronghorn antelope, mule deer, and elk. The WGFD has determined that the project area contains yearlong and winter range for pronghorn antelope; winter yearlong and yearlong range for mule deer; and yearlong, crucial winter, and parturition range for elk.

Crucial Range is any particular seasonal range or habitat component, but describes that component which has been documented as the determining factor in a population's ability to maintain and reproduce itself at a certain level. Winter use is when a population or portion of a population of animals uses the documented suitable habitat sites within this range annually, in substantial numbers only during the winter period. Winter-Yearlong use is when a population or a portion of a population of animals makes general use of the documented suitable habitat sites within this range on a year-round basis. During the winter months there is a significant influx of additional animals into the area from other seasonal ranges. Yearlong use is when a population of animals makes general use of suitable documented habitat sites within the range on a year round basis. Animals may leave the area under severe conditions. Parturition Areas are documented birthing areas commonly used by females. It includes calving areas, fawning areas, and lambing grounds. These areas may be used as nurseries by some big game species.

Populations of pronghorn antelope and mule deer within their respective hunt areas are above WGFD objectives. Big game range maps are available in the PRB FEIS (3-119-143), the project file, and from the WGFD. The affected environment for pronghorn is discussed in the PRB FEIS on pp. 3-117 to 3-122 and for mule deer on pp. 3-127 to 3-132.

3.3.1.1. Elk

Currently there are an estimated 230 elk in the Fortification herd, down from 272 in 2002. The current WGFD objective for the herd is 150 (BLM 2006). The elk population occupying the Fortification Creek area is both locally and regionally important (Jahnke, 2006). As measured by hunting use, elk hunts in this area are destination hunts and this area is a highly sought after elk hunting area with relatively few licenses issued annually, although access is largely limited by the land ownership pattern. The effect of

CBNG development on elk in the Fortification Creek area has a high public interest as gauged by the response to recent Buffalo Field Office Resource Management Plan amendment scoping sessions (BLM, 2006).

In 1992, a 2.5 year study of the Fortification elk herd was initiated by the WGFD in cooperation with the Bureau of Land Management and area landowners, with the collaring of 17 cow elk. Data from this study allowed the WGFD to better delineate crucial elk winter range, elk summer/yearlong range and elk parturition range (BLM 2006).

The Carr Draw III West POD is divided in half. The southern half, containing two existing oil roads; and the northern half, containing large expanses of untouched preferred elk habitat in designated crucial winter and parturition ranges. Based on data from the Wyoming Oil and Gas Commission, as of July 27, 2009, there were approximately five existing oil wells and associated infrastructure and no producing gas wells within a total area of approximately 9.3 square miles comprised of the Carr Draw III West project. The five oil wells are located along an existing improved road within the southwest portion of the project area (Figure 3.1).

Approximately 2% (105 acres) of the Carr Draw III West POD is within crucial winter range. Crucial winter elk range is located in the extreme northern portion of the project area. Elk parturition range covers 53% (3,167 acres) of the project area. Parturition elk range encompasses the northern half of the project area. Figure 3.1 displays proposed and existing wells within each elk seasonal range delineation of this herd unit.

An analysis of elk habitat indicates that in 2005 approximately 41,976 acres of security habitat (19 patches) existed within the elk yearlong range; 4,159 contiguous acres within the vicinity of the Carr Draw III West POD and 942 acres within the project area boundary (a contiguous patch of 926 acres entirely within the project area).

Studies of radio telemetered elk from the Fortification Creek herd in the early 1990's showed some elk ranging out of the Fortification Creek elk herd unit as far north as Montana. More recent studies of radio telemetered elk (26 of a herd roughly 230) from the Fortification Creek herd have shown that some animals (between 15-20% of the collared animals) have been at least seasonally observed east of Wild Horse Creek and the Fortification Creek Planning Area (FCPA), on the west side of the Powder River, south along the Kinney Divide, and occasionally as far north as Sonnette, Montana, although the Fortification Creek Planning Area itself remains the core use area for the vast majority of this herd (Laird 2005). Some elk from this population have moved out of the Fortification Creek herd unit and pioneered new, small, local populations in surrounding areas in recent years, although these bands are currently not officially recognized as "herds" by the WGFD. The long distance range use extensions to Montana in the north are probably reflective of relative habitat continuity along the Powder River Breaks. All of these observations support the fact that elk are a wide ranging species, and will naturally move around to some degree from their core habitat at least seasonally, and in some instances, on a permanent basis (BLM 2006). Data collected in 2008-2009 have shown similar trends with 3 of 38 collared from the Fortification Creek herd being located outside of the herd unit for periods of 5 to 12 months. Two of these elk left the herd unit in May 2008 and the other left December 2008. They have not returned to the herd as of the writing of this document, confirming predictive research conclusions.

Data points from 14 of the 38 collared elk cows are located within the project area. Though the data points indicate usage of the project area year-round, intensity increases within the central portion (SE S10, SW S11, NE S 15, and NW S14, T50N, R76W) of the project area, inside WGFD designated parturition range, throughout the spring months (April through June), confirming a likely reliance on this area for calving. The data points from the 14 collared elk located within the project area represents 2% of

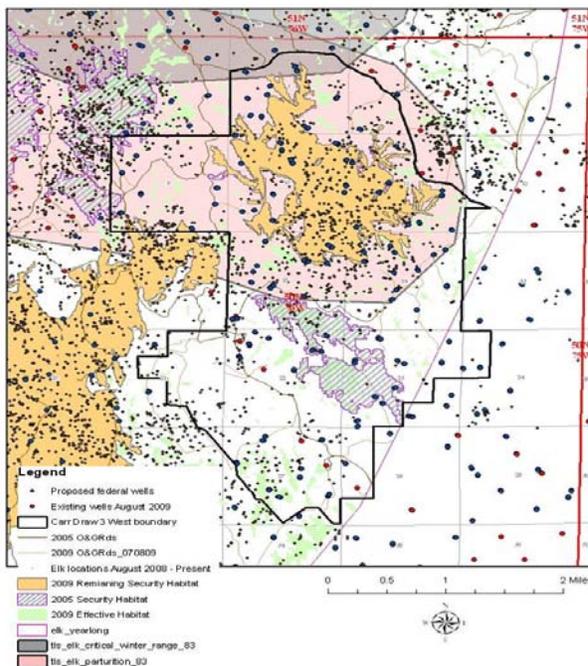
all data points collected from all of the collared elk. Table 3.5 indicates the percentage of data points collected inside the project area in relation to all data points collected from each of the individual 14 elk that have spent some time within the project area boundaries.

Table 3.5 Percent data points collected from inside the project area.

Elk collar number	Percent data points from inside project area	Elk collar number	Percent data points from inside project area
315311	9%	330988	1%
317530	13%	332416	3%
323491 (failed 6/11/08)	2%	335367 (failed 6/10/08)	66%
324395	1%	335399	6%
330448	30%	335672 (failed 5/2/08)	48%
330465	43%	335673	<1%
330485	1%	350470	6%

Prairie elk herds, such as the Fortification Creek herd, while not uncommon, are somewhat unique in the sense that this type of non-mountainous range does not provide a great deal of security for the animals, and these populations are generally quite vulnerable to disturbance. There are other prairie elk herds in this region (e.g., Tisdale Mtn. portion of the Powder River herd, Pine Ridge herd, Rochelle Hills herd, Custer N.F. herd across the Montana border, etc.), but wherever these prairie elk herds are found they are usually locally prized and often protected by the local and regional residents (BLM, 2006).

Figure 3.1



3.3.1.2. Aquatics

The project area is drained by ephemeral tributaries of Barber Creek, a tributary of the Powder River. No free-flowing springs were documented within the project area. Fish that have been identified in the Powder River watershed are listed in the PRB FEIS (3-156-159).

Aquatic invertebrate communities, which can be indicators of the quality of aquatic environments (Peterson 1990), are discussed in the PRB FEIS (pp. 3-153 to 3-154). Perennial streams within northeastern Wyoming were sampled by USGS between 1980 and 1981, and generally supported invertebrate communities that included taxa adapted to flowing water. Ephemeral stream communities generally were composed of taxa adapted to standing water (Peterson 1990).

Table 3.6 lists the fish that occur in the Upper Powder River subbasin and their WGFD Native Species Status (NSS) designation, if applicable. WGFD has identified Species of Greatest Conservation Need (SGCN) within the state, all of which are given NSS designations. Seven of the species that may occur in the Upper Powder River subbasin are designated as either NSS 1, 2, or 3 species. Species in these designations are considered to be species of concern, in need of more immediate management attention, and more likely to be petitioned for listing under the Endangered Species Act (ESA). For these species, WGFD recommends that no loss of habitat function occur. WGFD allows for some modification of the habitat, provided that habitat function is maintained (i.e., the location, essential features, and species supported are unchanged). NSS 4-7 refers to populations that are widely distributed throughout their native range and are stable or expanding. Habitats are also stable. There is no special concern for these species.

The Powder River Basin ecosystem and fishery is discussed in further detail in the PRB FEIS (pp. 3-155 to 3-166). The sturgeon chub is considered a sensitive species, according to Wyoming BLM Sensitive Species Policy, and will be discussed in more detail later in this document.

Table 3.6 Fish that occur in the Upper Powder River Subbasin

Wyoming Native Species Status	Species	Wyoming BLM Sensitive
NSS1	Sturgeon chub	Yes
NSS2	Goldeye	No
	Sauger	No
NSS3	Black bullhead	No
	Flathead chub	No
	Mountain sucker	No
	Plains minnow	No
NSS4	Channel catfish	No
	Northern redbhorse	No
	Quillback	No
	River carpsucker	No
	Stonecat	No
NSS6	Fathead minnow	No
	Plains killifish	No
NSS7	Longnose dace	No
	Sand shiner	No
	White sucker	No
None	Common carp	No
	Rock bass	No
	Shovelnose sturgeon	No

Amphibian and reptile species (herpetiles) occur throughout the Basin. WGFD conducted a baseline inventory of herpetiles along the Powder River and its major tributaries from 2004-2006 (Turner 2007). WYNDD has completed the first year of a three-year herpetile study in the Power River Basin in order to detect impacts from CBNG development (Griscom et al. 2009). Herpetiles expected to occur in the Powder River Basin, according to these studies, are listed in Table 3.7 (Turner 2007, Griscom et al.

2009). Eight of the species listed are classified by WGFD as SGCNs, all with a rating of NSS4, indicating that they are widely distributed throughout their native ranges, and populations are stable. Of the species listed in Table 3.7, WYNDD reported that, for 2008 surveys, boreal chorus frogs were the most abundant amphibian in the PRB and were located in a variety of habitats. The second most abundant amphibian was Woodhouse’s toad, which occurred along rivers, temporary ponds, and in CBNG reservoirs. Plains spadefoot and Great Basin toads were the least common species, occurring primarily in temporary ponds fed by rainstorms. Relatively few observations were made for reptile species. Bullsnares and sagebrush lizards were most commonly seen. Turtles were rarely observed, due to their almost exclusive occurrence in deep backwaters. Two of the herpetiles listed in Table 3.7, northern leopard frog and Columbia spotted frog, are Wyoming BLM sensitive species and will be discussed in detail later in this document.

Table 3.7 Herpetile species expected to occur in the Powder River Basin (Turner 2007,Griscom et al. 2009)

Species	Verified by Survey*	WGFD Status	Wyoming BLM Sensitive
Tiger salamander	Yes	NSS4	No
Northern leopard frog	Yes	NSS4	Yes
Milk Snake	No		No
Columbia spotted frog	Yes	NSS4	Yes
Bullfrog	Maybe	NSS4	No
Spiny softshell	Yes		No
Northern prairie lizard	No		No
Boreal chorus frog	Yes	NSS4	No
Great plains toad	Yes	NSS4	No
Woodhouse’s toad	Yes	NSS4	No
Plains spadefoot toad	Yes	NSS4	No
Short-horned lizard	Yes		No
Sagebrush lizard	Yes		No
Eastern yellowbelly racer	Yes		No
Prairie rattlesnake	Yes		No
Western hog-nosed snake	Yes		No
Bullsnares	Yes		No
Terrestrial garter snake	Yes		No
Plains garter snake	Yes		No
Common garter snake	Yes		No
Snapping turtle	Yes		No
Painted turtle	Yes		No
Notes			
* As reported in Turner (2007) and Griscom et al. (2009).			

3.3.1.3. Migratory Birds

Migratory birds are those that migrate for the purpose of breeding and foraging at some point in the year. According to WO Instruction Memorandum No. 2008-050, BLM must include migratory birds in every NEPA analysis of actions that have the potential to affect migratory bird species of concern in order to fulfill its obligations under the Migratory Bird Treaty Act.

The WGFD Wyoming Bird Conservation Plan (Nicholoff 2003) identified three groups of high-priority bird species in Wyoming: Level I – those that clearly need conservation action, Level II – species where the focus should be on monitoring, rather than active conservation, and Level III – species that are not otherwise of high priority but are of local interest. Vegetation types that occur in the project area include shortgrass prairie and shrub-steppe. Many species that are of high management concern use these areas

for their primary breeding habitats (Saab and Rich 1997). Nationally, grassland and shrubland birds have declined more consistently in the last 30 years than any other ecological association of birds (WY 2009). Species that may occur in these vegetation types, according to the Wyoming Bird Conservation Plan, are listed in Table 3.8 and are grouped by Level as identified in the Plan.

Table 3.8 Bird Species in the Wyoming Bird Conservation Plan

Level	Species	Wyoming BLM Sensitive
Level I	Brewer's sparrow	Yes
	Ferruginous hawk	Yes
	Greater sage-grouse	Yes
	Long-billed curlew	Yes
	McCown's longspur	No
	Mountain plover	Yes
	Sage sparrow	Yes
	Short-eared owl	No
	Upland sandpiper	No
	Western burrowing owl	Yes
Level II	Black-chinned hummingbird	No
	Bobolink	No
	Chestnut-collared longspur	No
	Dickcissel	No
	Grasshopper sparrow	No
	Lark bunting	No
	Lark sparrow	No
	Loggerhead shrike	Yes
	Sage thrasher	Yes
	Vesper sparrow	No
Level III	Common poorwill	No
	Say's phoebe	No

The affected environment for migratory birds is discussed in the PRB FEIS (pp. 3-150 to 3-153). This discussion includes a list of habitat requirements and foraging patterns for the species listed above, with the exception of upland sandpipers, common poorwills, and Say's phoebes, which are discussed here. Upland sandpipers prefer Great Plains grasslands, dryland grass pastures, hayfields, and alfalfa fields. They nest in grass-lined depressions in the ground and feed on insects and seeds on the ground where grasses are low and open. Common poorwills inhabit sparse, rocky sagebrush; open prairies; mountain-foothills shrublands; juniper woodlands; brushy, rocky canyons; and ponderosa pine woodlands. They prefer clearings, such as grassy meadows, riparian zones, and forest edges for foraging. They lay eggs directly on gravelly ground, flat rock, or litter of woodland floor. Nests are often placed near logs, rocks, shrubs, or grass for some shade. They feed exclusively on insects, catching them by leaping from the ground or a perch, or picking them up from the ground. Say's phoebes inhabit arid, open country with sparse vegetation, including shrub-steppe, grasslands, shrublands, and juniper woodlands. They nest on a variety of substrates such as cliff ledges, banks, bridges, eaves, and road culverts and often reuse nests in successive years. They eat mostly insects and berries.

3.3.1.4. Raptors

The affected environment for raptors is discussed in the PRB FEIS on pp. 3-141 to 3-148. Four raptor species are known to have used nests within 0.5 miles of the project area: golden eagles, red-tailed hawks, great-horned owls, and American kestrels.

The affected environment for golden eagles is discussed in the PRB FEIS on pp. 3-145 to 3-146. Golden eagles are listed as a Bird of Conservation Concern (BCC) by USFWS for Region 17, which encompasses the project area. BCCs are those species that represent USFWS's highest conservation priorities, outside of those that are already listed under ESA. The goal of identifying BCCs is to prevent or remove the need for additional ESA bird listings by implementing proactive management and conservation actions. Golden eagles were also identified as a Level III species in the Wyoming Bird Conservation Plan. Golden eagles are sensitive to human activity around nest sites and are threatened by loss of nesting habitat to industrial development, powerline executions, and other factors (Nicholoff 2003). The WGFD Wyoming Bird Conservation Plan habitat objectives for golden eagles include maintaining open country to provide habitat for small mammals as a food source. Recommendations for management include restricting human activities near nests during peak breeding season; protecting, enhancing, and restoring prey populations; and protecting known nesting territories. The affected environment for red-tailed hawks, great-horned owls, and American kestrels are discussed in the PRB FEIS (pp. 3-146 to 3-148).

Fifteen raptor nest sites were identified by WLS (WLS 2009) and BLM within 0.5 miles of the project boundary. These are listed in the table below. Of the nests listed, one was active in 2009. This nest (BLM ID# 3939) was active with red-tailed hawks. This nest has been inactive in the previous two years, but was also active in 2006. Nest 3715 was active with great horned owls 2005, but has not been active since that time. Nest 3717 was active with golden eagles from 2005 through 2008. Nest 3724 was active with red-tailed hawks from 2006 through 2008. Nest 3726 was active with red-tailed hawks in 2005 and 2006. Nest 4125 was active with red-tailed hawks in 2008. Nest 6340 was active with great-horned owls in 2008.

Table 3.9 Documented raptor nests within the Carr Draw III West project area.

BLM ID	UTMs	Legal	Substrate	Year	Condition	Status	Species
3715	421725E 4904359N	S22 T50N R76W	Creek bank				
				2009	Good	INAC	n/a
				2008	Excellent	INAC	n/a
				2007	Excellent	INAC	n/a
				2006	Gone	INAC	n/a
				2005	Excellent	ACTI	GRHO
3717	423528E 4905605N	S23 T50N R76W	Ponderosa pine				
				2009	Excellent	INAC	n/a
				2008	Excellent	ACTI	GOEA
				2007	Excellent	ACTI	GOEA
				2006	Unknown	ACTI	GOEA
				2005	Excellent	ACTI	GOEA
3724	420043E 4908002N	S9 T50N R76W	Ponderosa pine				
				2009	Good	INAC	n/a
				2008	Excellent	ACTI	RETA
				2007	Excellent	ACTI	RETA
				2006	Unknown	ACTI	RETA
				2005	Good	INAC	n/a

BLM ID	UTMs	Legal	Substrate	Year	Condition	Status	Species
3726	420856E 4902414N	S34 T50N R76W	Ponderosa pine				
				2009	Good	INAC	n/a
				2007	Excellent	INAC	n/a
				2006	Unknown	ACTI	RETA
				2005	Excellent	ACTI	RETA
				2004	Gone	INAC	n/a
3727	421545E 4908694N	S10 T50N R76W	Ponderosa pine				
				2009	Good	INAC	n/a
				2008	Excellent	INAC	n/a
				2007	Excellent	ACTI	RETA
				2005	Excellent	ACTI	RETA
				2004	Gone	INAC	n/a
3729	422526E 4906484N	S14 T50N R76W	Ponderosa pine				
				2009	Fair	INAC	n/a
				2008	Fair	INAC	n/a
				2007	Fair	INAC	n/a
				2006	Unknown	INAC	n/a
				2005	Fair	INAC	n/a
				2004	Gone	INAC	n/a
3732	419624E 4904960N	S21 T50N R76W	Ponderosa pine				
				2009	Fair	INAC	n/a
				2008	Good	INAC	n/a
				2007	Unknown	INAC	n/a
				2006	Gone	INAC	n/a
				2005	Fair	INAC	n/a
				2004	Gone	INAC	n/a
3939	421962E 4905624N	S22 T50N R76W	Ponderosa pine				
				2009	Excellent	ACTI	RETA
				2008	Good	INAC	n/a
				2007	Fair	INAC	n/a
				2006	Unknown	ACTI	RETA
4125	420693E 4905169N	S22 T50N R76W	Unknown				
				2009	Fair	INAC	n/a
				2008	Good	ACTI	RETA
				2007	Fair	INAC	n/a
				2006	Gone	INAC	n/a
4585	421417E 4903169N	S27 T50N R76W	Ponderosa pine				
				2009	Fair	INAC	n/a
				2008	Unknown	INAC	n/a
				2007	Fair	INAC	n/a

BLM ID	UTMs	Legal	Substrate	Year	Condition	Status	Species
6340	423346E 4903917N	S26 T50N R76W	Cottonwood , Live				
				2009	Excellent	INAC	n/a
				2008	Excellent	ACTI	GRHO
6348	419335E 4906024N	S16 T50N R76W	Creek bank				
				2009	Fair	INAC	n/a
				2008	Unknown	INAC	n/a

3.3.1.5. Plains Sharp-tailed Grouse

Plains sharp-tailed grouse are discussed in this document because specific concerns for this species were identified during the scoping process for the PRB FEIS. The affected environment for plains sharp-tailed grouse is discussed in the PRB FEIS on pp. 3-148 to 3-150.

Habitats within the Carr Draw III West project area have limited potential to support sharp-tailed grouse. The mosaic of grasslands and sagebrush-grasslands that occurs in the area may provide nesting and brood-rearing habitat, but the lack of wet meadows limit the likelihood of plains sharp-tailed grouse occurrence. The nearest known plains sharp-tailed grouse lek is approximately 14.5 miles to the west of the project area. No plains sharp-tailed grouse were noted in the project area by WLS or by the BLM biologist.

3.3.1.6. Sagebrush Obligates

Sagebrush communities are the most common habitat type in the project area. Large-scale development of energy reserves underlying sagebrush ecosystems is placing sagebrush communities and wildlife increasingly at risk (WY 2009). Sagebrush ecosystems support a variety of species, including migratory birds, raptors, big game, reptiles, and small mammals.

Sagebrush obligates are species that require sagebrush for some part of their life cycle and cannot survive without it. Though several Wyoming BLM sensitive species are associated with sagebrush ecosystems, including ferruginous hawk, loggerhead shrike, Townsend's big-eared bat, and western burrowing owl, these species are not obligated to this ecosystem. Sagebrush obligate species within the PRB that are listed as sensitive species by Wyoming BLM include Brewer's sparrow, sage thrasher, sage sparrow, and greater sage-grouse. All of these bird species require sagebrush for nesting, with nests typically located within or under the sagebrush canopy.

3.3.1.7. Threatened and Endangered and Sensitive Species

3.3.1.7.1. Threatened and Endangered Species

Within the BLM Buffalo Field Office there are three species that are Threatened or Endangered under the Endangered Species Act.

3.3.1.7.2. Blowout penstemon

On May 22, 2009 the Buffalo Field Office received a species list from the US Fish and Wildlife (USFWS) that included Blowout penstemon. This plant occurs on sand dunes or blowouts. At the time the Carr Draw III West POD was visited, this species was not on the USFWS list for the BFO administrative area and was not looked for. The operator was notified of the addition of this plant to the listed species list and surveys for suitable Blowout penstemon habitat were conducted in August 2009. No suitable habitat was identified (WLS 2009b).

3.3.1.7.3. Black-footed ferret

The black-footed ferret is listed as Endangered under the ESA. The affected environment for black-footed ferrets is discussed in the PRB FEIS on pg. 3-175.

A black-footed ferret population requires at least 1,000 acres of prairie dog colonies, separated by no more than 1.5 km, for survival (USFWS 1989). Black-tailed prairie dog colonies exist within the project area in S21, T50N, R76W and within 0.25 miles of the project boundary in S23, 24, 26, and 27 T50N R76W. These colonies have been mapped by several different consultants and WGFD over a range of years. Most recently, BHEC reported eight active colonies in 2008 within 0.25 miles of the project boundary. The individual mapped colonies range in size from 1 acre to 103.3 acres. One group of mapped prairie dog colonies occur within 1.5 km of each other, beginning with colonies directly southeast of the project area. The single colony located within the project area is isolated from any other colony. Because there are no groups of black-tailed prairie dog colonies separated by less than 1.5 km and totaling greater than 1,000 acres that intersects the project area, black-footed ferret habitat is not present within the Carr Draw III West project area.

In 2004, WGFD identified seven prairie dog complexes, located partially or wholly within the BFO administrative area, as potential black-footed ferret reintroduction sites (Grenier et al. 2004). The southeast portion of the Carr Draw III West project area is located within 0.25 miles from the Pleasantdale complex, the nearest potential reintroduction area.

3.3.1.7.4. Ute Ladies'-Tresses Orchid

The Ute ladies'-tresses orchid (ULT) is listed as Threatened under the ESA. The affected environment for ULT is discussed in the PRB FEIS on pg. 3-175.

The PRB FEIS reported that only four orchid populations had been documented within Wyoming, but since the writing of that document, five additional sites were located in 2005 and one in 2006 (Heidel pers. Comm.). The new locations were in the same drainages as the original populations, with two on the same tributary and within a few miles of an original location. Drainages with documented orchid populations include Wind Creek and Antelope Creek in northern Converse County, Bear Creek in northern Laramie and southern Goshen Counties, Horse Creek in Laramie County, and Niobrara River in Niobrara County.

There are no proposed actions associated with the Carr Draw III West POD that have not been analyzed under NEPA that will impact perennial systems. Water discharge will occur at outfalls already analyzed and approved in the Waterline Sundry, Somerville Waterline Sundry 1, and Somerville Waterline Sundry 2.

3.3.1.8. Sensitive Species

Wyoming BLM has prepared a list of sensitive species on which management efforts should be focused towards maintaining habitats under a multiple use mandate. The goals of the policy are to:

- Maintain vulnerable species and habitat components in functional BLM ecosystems
- Ensure sensitive species are considered in land management decisions
- Prevent a need for species listing under the ESA
- Prioritize needed conservation work with an emphasis on habitat

This section lists those species on the Wyoming BLM sensitive species list that, according to the PRB

FEIS, may occur in the Powder River Basin Oil and Gas Project Area, which includes the Carr Draw III West project area. The following discussion for each of those sensitive species includes an analysis of whether the species is likely to occur in or be affected by the proposed Carr Draw III West POD. According to the PRB FEIS, spotted bats were not likely to be affected by the Powder River Basin Oil and Gas Project, and are therefore not discussed in this section. The authority for the sensitive species policy and guidance comes from the Endangered Species Act of 1973, as amended; Title II of the Sikes Act, as amended; the Federal Land Policy and Management Act (FLPMA) of 1976; and the Department Manual 235.1.1A.

3.3.1.8.1. Northern Leopard Frog

The affected environment for northern leopard frog is discussed in the PRB FEIS on pg. 3-181. This is a WGFD Species of Greatest Conservation Need (SGCN), with a rating of NSS4, indicating that the species is common (widely distributed throughout its native range and populations are stable) and habitat is stable.

Northern leopard frog habitat is not present within the project area.

3.3.1.8.2. Columbia Spotted Frog

The affected environment for the Columbia spotted frog is discussed in the PRB FEIS on pg. 3-193. This is a WGFD SGCN, with a rating of NSS4, indicating that the species is common (widely distributed throughout its native range and populations are stable) and habitat is stable.

Within the BFO administrative area, the Columbia spotted frog is confined to the headwaters of the South Tongue River drainage. The project area is not located within this drainage and is thus outside the species' range. Columbia spotted frogs are not expected to occur in the project area.

3.3.1.8.3. Sturgeon Chub

The sturgeon chub was petitioned for listing under the ESA in 2000, but, in 2001, it was determined that the listing was not warranted, due to the population being more abundant and better distributed throughout its range than previously believed. According to Wyoming BLM Sensitive Species policy, because this species has been petitioned for listing, it remains on the sensitive species list. The affected environment for this species is discussed in the PRB FEIS on pg. 3-165. Sturgeon chub is listed by WGFD as a SGCN with a rating of NSS1, indicating that the species is rare (populations are physically isolated and/or it occurs in extremely low densities throughout its historic range and that extirpation appears possible), and habitat is declining or vulnerable.

Discharge from the proposed project will flow into the Powder River, where this species is known to occur.

3.3.1.8.4. Yellowstone Cutthroat Trout

The affected environment for Yellowstone cutthroat trout is discussed in the PRB FEIS on pg. 3-192. Within the BFO administrative area, this species may occur in the Upper Tongue sub-watershed. The project area is located outside of this watershed and is thus outside the species' range. Yellowstone cutthroat trout is not expected to occur in the project area.

3.3.1.8.5. Baird's Sparrow

The affected environment for Baird's sparrow is discussed in the PRB FEIS on pg. 3-188. In addition to being listed as a Wyoming BLM sensitive species, Baird's sparrows are listed by USFWS as a BCC for Region 17. Suitable habitat is present within the southern half of the project area.

3.3.1.8.6. Bald Eagle

The affected environment for bald eagles is described in the PRB FEIS on pg. 3-175. At the time the PRB FEIS was written, the bald eagle was listed as a threatened species under the ESA. Due to successful recovery efforts, it was removed from the ESA on 8 August 2007. The bald eagle remains under the protection of the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. In order to avoid violation of these laws and uphold the BLM's commitment to avoid any future listing of this species, the BLM shall continue to comply with all conservation measures and terms and conditions identified in the Powder River Basin Oil and Gas Project Biological Opinion (PRB Oil & Gas Project BO), #WY07F0075) (USFWS 2007) shall continue to be complied with.

In addition to being listed as a Wyoming BLM sensitive species, bald eagles are a WGFD SGCN with a NSS2 rating, due to populations being restricted in numbers and distribution, ongoing significant loss of habitat, and sensitivity to human disturbance. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are clearly in need of conservation action. They are also listed by USFWS as a BCC for Region 17.

Bald eagle nesting and roosting habitat is present within one mile of the Carr Draw III West project area. A large stand of mature cottonwoods is present along Barber Creek in NESE S17, T50N, R76W. Numerous prairie dog colonies provide reliable prey sources. Seven bald eagles were observed at two locations along Barber Creek within one mile of the project area in on two consecutive days in December of 2007. The observers (Big Horn Environmental Consultants) also reported a deer carcass within Barber Creek. It is likely that bald eagles do not use this stand of trees on a regular basis for winter roosting, but, in this case, were gathered at a concentrated food source.

3.3.1.8.7. Brewer's Sparrow

The affected environment for Brewer's sparrow is discussed in the PRB FEIS on pg. 3-200. In addition to being listed as a BLM Wyoming sensitive species, Brewer's sparrows are a WGFD SGCN, with a rating of NSS4 because populations are declining, habitat is vulnerable with no ongoing loss, and the species is not sensitive to human disturbance. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are clearly in need of conservation action. They are also listed by USFWS as a BCC for Region 17. Brewer's sparrow habitat is present throughout the project area, and this species is suspected to occur.

3.3.1.8.8. Ferruginous Hawk

The affected environment for ferruginous hawk is discussed in the PRB FEIS on pg. 3-183. In addition to being listed as a Wyoming BLM sensitive species, ferruginous hawks are a WGFD SGCN, with a rating of NSS3 because the species is widely distributed, population status and trends are unknown but are suspected to be stable, they are experiencing ongoing loss of habitat, and they are sensitive to human disturbance. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are clearly in need of conservation action. They are also listed by USFWS as a BCC for Region 17. The nearest known ferruginous hawk nest is approximately two miles to the east of the project area. BLM has three years of survey results for this nest. It was active with ferruginous hawks in 2005 and subsequently active with red-tailed hawks in 2007 and 2008. Ferruginous hawk nests are located throughout the Powder River Basin. Foraging habitat and prey is available throughout the project area, and ferruginous hawks may occur.

3.3.1.8.9. Greater Sage-Grouse

The affected environment for greater sage-grouse (herein referred to as sage-grouse) is discussed in the PRB FEIS (pg. 3-194 to 3-199). In addition to being listed as a Wyoming BLM sensitive species, sage-grouse are listed as a WGFD SGCN, with a rating of NSS2, because populations are declining, and they are experiencing ongoing significant loss of habitat. The Wyoming Bird Conservation Plan rates them as

a Level I species, indicating they are clearly in need of conservation action. They are also listed by USFWS as a BCC for Region 17.

In recent years, several petitions have been submitted to USFWS to list sage-grouse as threatened or endangered under the ESA. On January 12th, 2005, USFWS issued a decision that the listing of the greater sage-grouse was not warranted following a Status Review. The decision document supporting this outcome noted the need to continue or expand all conservation efforts to conserve sage-grouse. In 2007, the U.S. District Court remanded that decision, stating that USFWS's decision-making process was flawed and ordered USFWS to conduct a new Status Review (Winmill Decision Case No. CV-06-277-E-BLW, December 2007).

The BFO has taken several steps to consider the evolving information on impacts to sage-grouse which could result from development activities on federal lands. These steps include:

- February 2008: BFO consolidated research and data to identify high-quality sage-grouse habitat in the Powder River Basin. University of Montana developed models indicating quality of habitat using topographic and vegetative criteria and habitat selection by radio-collared birds to identify areas with high potential for use by nesting/wintering birds. The models are divided into habitat categories of 1 through 5. Categories 1 & 2 are not considered suitable habitat. Category 3 may have the vegetative components necessary for suitable habitat. Categories 4 & 5 have the vegetative components for suitable habitat, and meet criteria for topography, slope and other landscape level characteristics that were indicated through analysis of radio-collared sage-grouse. The 4 and 5 categories of habitats are considered "high-quality".
- March 2008: BFO, Wyoming State Office (WYSO) and Washington Office (WO) established the need for a Resource Management Plan (RMP) approach to evaluate impacts to sage-grouse and habitat. A RMP amendment or revision was discussed. The decision to begin a RMP revision was approved two years ahead of the originally scheduled date.
- May 28, 2008: BFO conducted a public meeting to present habitat information developed through research in the Powder River Basin. BFO solicited additional information from the public and energy development companies to refine sage-grouse habitat maps. The objective was to establish areas of interim management for sage-grouse to preserve decision space during the RMP process.
- August 13, 2008: BFO released its *Guidance for general management actions during BFO Resource Management Plan Revision* and a map identifying the Focus Areas. The guidance contained criteria for any proposed development in Focus Areas (Appendix A). For fluid mineral development inside Focus Areas, this guidance includes the following requirement; "The proponent will be asked to demonstrate that the proposal can be managed in a manner that effectively conserves sage-grouse habitats affected by the proposal." The guidance also states that "Efforts will be made to assure that the impacts of surface disturbing projects will be consistent with a well pad density of 640 acres."

Efforts to minimize impacts to high-quality sage-grouse habitats outside the Focus Areas will be far less restrictive, with well densities up to 80-acre spacing, but may include site-specific mitigating measures suggested by the best available science.

- August 1, 2008: Concurrent with BFO efforts, the Governor of the State of Wyoming issued an Executive Order (EO 2008-2) mandating special management for all lands within sage-grouse Core Population Areas. Lands for special management were identified by the Wyoming

Governor's Sage-Grouse Implementation Team, and generally followed the boundaries of the majority of the Focus Areas identified by the BFO. This team also recommended stipulations to be placed on development activities on state lands to ensure existing habitat function is maintained within those areas. EO 2008-2 also identifies objectives outside of Core Areas, including that "...development scenarios should be designed and managed to maintain populations, habitats and essential migration routes outside core population areas."

- August 13, 2008 to the Present: BFO crafted an updated impacts assessment to be included in all project analyses affecting sage-grouse habitat. This analysis included research conducted in the Powder River Basin and other sage-grouse research published since the 2003 PRB FEIS and ROD. The analysis explicitly tied impacts to the impacts accepted under the 2003 ROD.
- October 1, 2008: BFO officially began the RMP revision. This process was accelerated by two years to more rapidly assess impacts to sage-grouse.
- April 14, 2009: BFO/WYSO entered into an agreement with the University of Montana and the Miles City Field Office to conduct a population viability analysis in the Powder River Basin. The emphasis will be on the adequacy of BFO Focus Areas for maintenance of a persistent sage-grouse population. Information gathered will be used in developing alternatives for the RMP revision.
- May, 2009: The WGFDD released an updated version of its *Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats*, which further described management objectives for sage-grouse outside Core Areas: "Non-core areas should not be construed as "sacrifice areas" since this conservation strategy requires habitat connectivity and movement between populations in core areas. The goal in non-core areas is to maintain habitat conditions that will sustain at least a 50% probability of lek persistence over the long term."

In conformance with Appendix E of the PRB FEIS BLM BFO has initiated actions within the PRB FEIS analysis area in response to additional information regarding impacts to sage-grouse. These measures include:

- Early initiation of a RMP revision, based on the evaluation of monitoring data generated under the mitigation monitoring and reporting plan (MMRP) in the PRB FEIS Record of Decision.
- Establishment of sage-grouse Focus Areas, encompassing approximately 1 million acres of sage-grouse habitat. These areas are managed under strict guidelines designed to preserve sage-grouse habitat for development of alternatives during the RMP process (Appendix A).
- Initiation of a population viability analysis in the Powder River Basin. This is a 24-month project involving the USGS, BLM Miles City Field Office, BLM BFO, and the University of Montana.
- Development of alternatives that modify the proposed action to reflect the best available science in sage-grouse management.
- Development of conditions of approval, specific to sage-grouse management, that incorporate some recommendations from recent research, the NE Local Sage-grouse Working Group, and the Petroleum Association of Wyoming.

The 2003 PRB EIS significance threshold and population viability assumptions are based on the analysis that sufficient functioning habitat for sage grouse will remain to support population viability within the project area. The six areas identified as BFO sage-grouse Focus Areas assume that sufficient amounts of sage-grouse habitat remains unfragmented by energy or other man-made infrastructure. It is also assumed that the fragmented portions in the energy areas of sage-grouse habitat provide for the necessary breeding, feeding, and sheltering components to sustain sage-grouse habitat connectivity between the six Focus Areas.

Suitable sage-grouse habitat is present in the Carr Draw III West project area. Continuous stands of sparsely to moderately dense sagebrush are present in patches throughout the project area. Sections 09, 21, 22, 23, and 27, T50N R76W contain the largest and most contiguous stands of sagebrush on moderate topography. Stands of sagebrush located near moist draws throughout the project area provide brood rearing and late summer habitat. Sage-grouse habitat models indicate that approximately 40% of the project area, 2,350 acres, contains high quality sage-grouse nesting habitat (Doherty 2008). According to a statewide population density model that was developed based on lek attendance (Doherty 2008), the portions of the project area in S14, S15, S21, S22, S23, S26, and S27, T50N R76W are partially contained in an area, that when combined with other similar areas, is predicted to contain 80% of the state’s sage-grouse population. The portions of the project in E S14 and E S23 T50N R76W, when combined with other similar areas, are predicted to contain 75% of the state’s sage-grouse population. The portions of the project in SE S14 and E S23 T50N R76W, when combined with other similar areas, are predicted to contain 65% of the state’s sage-grouse population

The State Wildlife Agencies' Ad Hoc Committee for Consideration of Oil and Gas Development Effects to Nesting Habitat (2008) recommends that impacts be considered for leks within four miles of oil and gas developments. WGFD records indicate that six sage-grouse leks occur within four miles of the project area. These six lek sites are identified in Table 3.10.

Table 3.10 Sage-grouse leks within 4 miles of the Carr Draw III West project area

Lek Name	Legal Location	Distance from Project Area (mi)	Occupied?
Fortification	SWNW S25 51/76	2	Yes
Hayden II	SWSE S31 51/75	2.4	Yes
Hayden I	SESW S17 50/75	2.3	Yes
Barber Creek – South Prong	SESW S01 49/76	2.4	Yes
Laskie Draw East	NWNE S03 49/76	1.3	Yes
Laskie Draw	SWSE S04 49/76	2.3	Yes

3.3.1.8.10. Loggerhead Shrike

The affected environment for loggerhead shrike is discussed in the PRB FEIS on pg. 3-187. In addition to being listed as a Wyoming BLM sensitive species, loggerhead shrikes are listed by USFWS as a BCC for Region 17. The Wyoming Bird Conservation Plan rates them as a Level II species, indicating they are in need of monitoring. Loggerhead shrike habitat is present throughout the project area, and the species is suspected to occur.

3.3.1.8.11. Long-billed Curlew

The affected environment for long-billed curlew is discussed in the PRB FEIS on pg. 3-184. In addition to being listed as a Wyoming BLM sensitive species, long-billed curlews are a WGFD SGCN, with a rating of NSS3, because populations are restricted in distribution, and habitat is vulnerable but not undergoing significant loss. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are

clearly in need of conservation action. They are also listed by USFWS as a BCC for Region 17. Long-billed curlew habitat is present throughout the project area, and the species may occur.

3.3.1.8.12. Mountain Plover

The affected environment for mountain plover is discussed in the PRB FEIS on pg. 3-177 to 3-178. At the time the PRB FEIS was written, the mountain plover was proposed for listing as a threatened species under the ESA. In 2003, USFWS withdrew the proposal, finding that the population was larger than had been thought and was no longer declining. In addition to being listed as a Wyoming BLM sensitive species, mountain plovers are a WGFDF SGCN, with a rating of NSS4, because population status and trends are unknown but are suspected to be stable, habitat is vulnerable without ongoing significant loss, and the species is sensitive to human disturbance. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are clearly in need of conservation action. They are also listed by USFWS as a BCC for Region 17.

Suitable mountain plover habitat is not present within 0.25 mile of project activities. The prairie dog colony in NENE S21 T50N R76W is small and the terrain does not provide preferred habitat for mountain plovers (WLS 2009).

3.3.1.8.13. Northern Goshawk

The affected environment for northern goshawk is discussed in the PRB FEIS on pg. 3-193 to 3-194. In addition to being listed as a Wyoming BLM sensitive species, northern goshawks are a WGFDF SGCN, with a rating of NSS4, because the species is widely distributed, population status and trends are unknown but are suspected to be stable, habitat is vulnerable but not undergoing any significant loss, and the species is sensitive to human disturbance. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are clearly in need of conservation action. The project area does contain stands of ponderosa pine. Suitable northern goshawk habitat is present in the project area, and the species may to occur.

3.3.1.8.14. Peregrine Falcon

The affected environment for peregrine falcon is discussed in the PRB FEIS on pg. 3-194. In addition to being listed as a Wyoming BLM sensitive species, peregrine falcons are a WGFDF SGCN, with a rating of NSS3, because populations are restricted in distribution, habitat is restricted but not undergoing significant loss, and they are sensitive to human disturbance. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are clearly in need of conservation action. They are also listed by USFWS as a BCC for Region 17. The project area does not contain cliffs, and peregrine falcons are not suspected to breed in the project area.

3.3.1.8.15. Sage Sparrow

The affected environment for sage sparrow is discussed in the PRB FEIS on pg. 3-200 to 3-201. Sage sparrows are a WGFDF SGCN, with a rating of NSS3, because populations are restricted in distribution, habitat is restricted but not undergoing significant loss, and they are sensitive to human disturbance. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are clearly in need of conservation action. They are also listed by USFWS as a BCC for Region 17. The areas of moderately dense shrub cover and smaller stature shrubs that occur throughout the project area may be selected for nesting habitat.

3.3.1.8.16. Sage Thrasher

The affected environment for sage thrasher is discussed in the PRB FEIS on pg. 3-199 to 3-200. In addition to being listed as a Wyoming BLM sensitive species, sage thrashers are a WGFDF SGCN, with a rating of NSS4, because populations are declining, habitat is vulnerable but not undergoing loss, and the species is not sensitive to human disturbance. The Wyoming Bird Conservation Plan rates them as a

Level II species, indicating the action and focus should be on monitoring and because Wyoming has a high percentage of and responsibility for the breeding population. They are also listed by USFWS as a BCC for Region 17.

The project area contains marginal habitat for sage thrashers, due to the presence of only moderately dense sagebrush stands. Although they prefer dense stands of shrubs for nesting, sage thrashers may occur throughout the project area.

3.3.1.8.17. Trumpeter Swan

The affected environment for trumpeter swan is discussed in the PRB FEIS on pg. 3-193. In addition to being listed as a Wyoming BLM sensitive species, trumpeter swans are a WGFD SGCN, with a rating of NSS2, because populations are restricted in numbers and distribution, they are experiencing ongoing and significant loss of habitat, and they are sensitive to human disturbance. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are clearly in need of conservation action. Issues, management strategies, and population goals are addressed in the Trumpeter Swan Recovery Plans (Pacific Flyway Study Committee 2002, Patla 2001, Subcommittee on Rocky Mountain Trumpeter Swans 1998). The project area does not contain lakes and ponds with developed aquatic vegetation that trumpeter swans prefer. This species is not suspected to occur in the project area.

3.3.1.8.18. Western Burrowing Owl

The affected environment for western burrowing owl (burrowing owl) is discussed in the PRB FEIS on pg. 3-186. In addition to being listed as a Wyoming BLM sensitive species, burrowing owls are a WGFD SGCN, with a rating of NSS4 because the species is widely distributed, population status and trends are unknown but are suspected to be stable, habitat is restricted or vulnerable without recent or on-going significant loss, and it may be sensitive to human disturbance. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are clearly in need of conservation action, and they are also a USFWS BCC in Region 17.

Current population estimates for the United States are not well known but trend data suggest declines throughout the burrowing owl's North American range (McDonald et al. 2004). Primary threats are habitat loss and fragmentation, mostly due to intensive agricultural and urban development and habitat degradation, due to declines in populations of colonial burrowing mammals (Klute et al. 2003).

The BFO database and WLS survey results indicate that no burrowing owl nest has been reported within the project area or within 0.25 mile of the Carr Draw III West project area. Prairie dog colonies are present within 0.25 miles of the project area in S23, S24, S26, and S27 T50N R76W and this species may occur in those areas.

3.3.1.8.19. White-faced Ibis

The affected environment for white-faced ibis is discussed in the PRB FEIS on pg. 3-182. In addition to being listed as a Wyoming BLM sensitive species, the white-faced ibis is a WGFD SGCN, with a rating of NSS3, because populations are restricted in numbers and distribution, habitat is restricted and vulnerable but not undergoing significant loss, and they are sensitive to human disturbance.

The project area does not contain any water bodies with islands of tall emergent vegetation, nor does it include wet hay meadows, flooded agricultural croplands, or marshes. Suitable white-faced ibis nesting habitat is not present in the project area, and the species is not expected to occur.

3.3.1.8.20. Yellow-billed Cuckoo

The affected environment for yellow-billed cuckoo is discussed in the PRB FEIS on pg. 3-185. In addition to being listed as a Wyoming BLM sensitive species, the yellow-billed cuckoo is a WGFD

SGCN, with a rating of NSS2, because populations are restricted in numbers and distribution and they are experiencing ongoing significant loss of habitat. The project area does not contain mature cottonwood riparian habitats and the species is not expected to occur.

3.3.1.8.21. Black-tailed Prairie Dog

The affected environment for black-tailed prairie dogs is discussed in the PRB FEIS (pg 3-179). At the time the PRB FEIS was written, the black-tailed prairie dog was added to the list of candidate species for federal listing in 2000 (USFWS 2000). It was removed from the list in 2004. Wyoming BLM considers black-tailed prairie dogs a sensitive species and continues to afford this species the protections described in the PRB FEIS. The black-tailed prairie dog is a WGFD SGCN, with a rating of NSS3, because populations are declining, and habitat is vulnerable but not undergoing significant loss.

The black-tailed prairie dog is considered common in Wyoming, although its abundance fluctuates with activity levels of Sylvatic plague and the extent of control efforts by landowners. Comparisons with 1994 aerial imagery indicated that black-tailed prairie dog acreage remained stable from 1994 through 2001, but aerial surveys conducted in 2003 indicated that approximately 47% of the prairie dog acreage was impacted by Sylvatic plague and/or control efforts (Grenier et al. 2004). Due to human-caused factors, black-tailed prairie dog populations are now highly fragmented and isolated (Miller 1994). Most colonies are small and subject to potential extirpation due to inbreeding, population fluctuations, and other problems that affect long term population viability, such as landowner poisoning and disease (Primack 1993, Meffe and Carroll 1994, Noss and Cooperrider 1994).

Prairie dog colonies are present within 0.25 miles of the project area in S23, S24, S26, and S27 T50N R76W.

3.3.1.8.22. Fringed Myotis

The affected environment for fringed myotis is discussed in the PRB FEIS on pg. 3-188 to 3-189. In addition to being listed as a BLM WY sensitive species, the fringed myotis is a WGFD SGCN, with a rating of NSS2, because populations are restricted in distribution, they are experiencing ongoing significant loss of habitat, and they are sensitive to human disturbance. The fringed myotis occupies a variety of habitats, including grasslands and basin-prairie shrublands, usually in proximity of drinking water (Hester and Grenier 2005). After feeding, it uses night roosts, which may include buildings, rock crevices, and bridges (Hester and Grenier 2005), all of which occur in the vicinity of the project area.

Fringed myotis may occur in the project area, due to availability of roost sites.

3.3.1.8.23. Long-eared Myotis

The affected environment for long-eared myotis is discussed in the PRB FEIS on pg. 3-201. In addition to being listed as a BLM WY sensitive species, the long-eared myotis is a WGFD SGCN, with a rating of NSS2, because populations are restricted in distribution, they are experiencing ongoing significant loss of habitat, and they are sensitive to human disturbance. Although long-eared myotis primarily inhabit coniferous forest and woodland, they are occasionally found in cottonwood riparian areas and sagebrush grasslands where roost sites are available (Hester and Grenier 2005). Roosts include cavities in snags, under loose bark, stumps, buildings, and rock crevices (Hester and Grenier 2005), all of which may occur in the vicinity of the project area.

Because of the potential for available roost sites, long-eared myotis may occur in the Carr Draw III West project area.

3.3.1.8.24. Swift Fox

The affected environment for swift fox is discussed in the PRB FEIS on pg. 3-189. In addition to being

listed as a BLM WY sensitive species, swift fox is also listed as a WGFD SGCN, with a rating of NSS4, because population status and trends are unknown but are suspected to be stable, and habitat is vulnerable but is not undergoing significant loss.

The project area does not contain suitable swift fox habitat. The overall rough terrain precludes the availability of den sites that would provide good views of the surrounding area. No occurrences of swift fox have been reported in the vicinity of the project area. Swift fox are not expected to occur in the project area.

3.3.1.8.25. Townsend’s Big-eared Bat

The affected environment for Townsend’s big-eared bat is discussed in the PRB FEIS on pg. 3-189. In addition to being listed as a BLM WY sensitive species, Townsend’s big-eared bat is listed as a WGFD SGCN, with a rating of NSS2, because populations are restricted in distribution, they are experiencing ongoing significant loss of habitat, and they are sensitive to human disturbance. Townsend’s big-eared bats occur in sagebrush and other shrublands, and roosts include rock outcrops and buildings, which occur in the vicinity of the project area. It may be limited to areas with reliable, accessible sources of drinking water (Hester and Grenier 2005), such as the Powder River. Foraging areas include riparian corridors (Hester and Grenier 2005).

Townsend’s big-eared bat is not likely to occur in the project area because due to the lack of potential roost sites.

3.3.1.8.26. Porter’s Sagebrush

The affected environment for Porter’s Sagebrush is discussed in the PRB FEIS on pg. 3-190. The Carr Draw III West project area does not contain suitable habitat for this species, and it is not expected to occur.

3.3.1.8.27. Williams’ Wafer-Parsnip

The affected environment for William’s wafer-parsnip is discussed in the PRB FEIS on pg. 3-191 to 3-192. The Carr Draw III West project area is outside of this species’ range, and it is not expected to occur.

3.4. West Nile Virus

West Nile virus (WNV) is a mosquito-borne disease that can cause encephalitis or brain infection. Mosquitoes spread this virus after they feed on infected birds and then bite people, other birds, and animals. WNV is not spread by person-to-person contact, and there is no evidence that people can get the virus by handling infected animals.

Since its discovery in 1999 in New York, WNV has become firmly established and spread across the United States. Birds are the natural vector host and serve not only to amplify the virus, but to spread it. Though less than 1% of mosquitoes are infected with WNV, they still are very effective in transmitting the virus to humans, horses, and wildlife. *Culex tarsalis* appears to be the most common mosquito to vector, WNV.

The human health issues related to WNV are well documented and continue to escalate. Historic data collected by the CDC and published by the USGS at www.westnilemaps.usgs.gov are summarized below. Reported data from the Powder River Basin (PRB) includes Campbell, Sheridan and Johnson counties.

Table 3.11 Historical West Nile Virus Information

Year	Total WY Human Cases	Human Cases PRB	Veterinary Cases PRB	Bird Cases PRB
2001	0	0	0	0

Year	Total WY Human Cases	Human Cases PRB	Veterinary Cases PRB	Bird Cases PRB
2002	2	0	15	3
2003	392	85	46	25
2004	10	3	3	5
2005	12	4	6	3
2006	65	0	2	2
2007*	155	22	Unk	1
2008*	10	0	0	0

*Wyoming Department of Health Records.

Human cases of WNV in Wyoming occur primarily in the late summer or early fall. There is some evidence that the incidence of WNV tapers off over several years after a peak following initial outbreak (Litzel and Mooney, personal conversations). If this is the case, occurrences in Wyoming are likely to increase over the next few years, followed by a gradual decline in the number of reported cases.

Although most of the attention has been focused on human health issues, WNV has had an impact on vertebrate wildlife populations. At a recent conference at the Smithsonian Environmental Research Center, scientists disclosed WNV had been detected in 157 bird species, horses, 16 other mammals, and alligators (Marra et al 2003). In the eastern US, avian populations have incurred very high mortality, particularly crows, jays and related species. Raptor species also appear to be highly susceptible to WNV. During 2003, 36 raptors were documented to have died from WNV in Wyoming including golden eagle, red-tailed hawk, ferruginous hawk, American kestrel, Cooper's hawk, northern goshawk, great-horned owl, prairie falcon, and Swainson's hawk (Cornish et al. 2003). Actual mortality is likely to be greater. Population impacts of WNV on raptors are unknown at present. The Wyoming State Vet Lab determined 22 sage-grouse in one study project (90% of the study birds), succumbed to WNV in the PRB in 2003. While birds infected with WNV have many of the same symptoms as infected humans, they appear to be more sensitive to the virus (Rinkes 2003).

Mosquitoes can potentially breed in any standing water that lasts more than four days. In the Powder River Basin, there is generally increased surface water availability associated with CBNG development. This increase in potential mosquito breeding habitat provides opportunities for mosquito populations to increase. Preliminary research conducted in the Powder River Basin indicates WNV mosquito vectors were notably more abundant on a developed CBNG site than two similar undeveloped sites (Walker et al. 2003). Reducing the population of mosquitoes, especially species that are apparently involved with bird-to-bird transmission of WNV, such as *Culex tarsalis*, can help to reduce or eliminate the presence of virus in a given geographical area (APHIS 2002). The most important step any property owner can take to control such mosquito populations is to remove all potential man-made sources of standing water in which mosquitoes might breed (APHIS 2002).

The most common pesticide treatment is to place larvicidal briquettes in small standing water pools along drainages or every 100 feet along the shoreline of reservoirs and ponds. It is generally accepted that it is not necessary to place the briquettes in the main water body because wave action prevents this environment from being optimum mosquito breeding habitat. Follow-up treatment of adult mosquitoes with malathion may be needed every 3 to 4 days to control adults following application of larvicide (Mooney, personal conversation). These treatment methods seem to be effective when focused on specific target areas, especially near communities, however they have not been applied over large areas nor have they been used to treat a wide range of potential mosquito breeding habitat such as that associated with CBNG development.

The WDEQ and the Wyoming Department of Health sent a letter to CBNG operators on June 30, 2004. The letter encouraged people employed in occupations that require extended periods of outdoor labor, be provided educational material by their employers about WNV to reduce the risk of WNV transmission. The letter encouraged companies to contact either local Weed and Pest Districts or the Wyoming Department of Health for surface water treatment options.

3.5. Water Resources

The project area is within Barber Creek drainage in the Upper Powder River watershed.

3.5.1.1. Groundwater

WDEQ water quality parameters for groundwater classifications (Chapter 8 – Quality Standards for Wyoming Groundwater) define the following limits for TDS: 500 mg/l TDS for Drinking Water (Class I), 2000 mg/l for Agricultural Use (Class II) and 5000 mg/l for Livestock Use (Class III).

A search of the Wyoming State Engineer Office (WSEO) Ground Water Rights Database for this area showed 16 registered stock and domestic water wells within ½ mile of a federal CBNG producing well in the POD with depths ranging from 25 to 1,200 feet. For additional information on water, please refer to the PRB FEIS (January 2003), Chapter 3, Affected Environment pages 3-1 through 3-36 (groundwater).

The ROD includes a Monitoring, Mitigation and Reporting Plan (MMRP). The objective of the plan is to monitor those elements of the analysis where there was limited information available during the preparation of the EIS. The MMRP called for the use of adaptive management where changes could be made based on monitoring data collected during implementation.

Specifically relative to groundwater, the plan identified the following (PRB FEIS ROD page E-4):

- The effects of infiltrated waters on the water quality of existing shallow groundwater aquifers are not well documented at this time;
- Potential impacts will be highly variable depending upon local geologic and hydrologic conditions;
- It may be necessary to conduct investigations at representative sites around the basin to quantify these impacts;
- Provide site specific guidance on the placement and design of CBM impoundments, and;
- Shallow groundwater wells would be installed and monitored where necessary.

3.5.1.2. Surface Water

The project area is within the Barber Creek drainage which is tributary to the Upper Powder River primary watershed. Most of the drainages in the area are ephemeral (flowing only in response to a precipitation event or snow melt) to intermittent (flowing only at certain times of the year when it receives water from alluvial groundwater, springs, or other surface source – PRB FEIS Chapter 9 Glossary). The channels are primarily well vegetated grassy swales, without defined bed and bank.

The PRB FEIS presents the historic mean Electrical Conductivity (EC, in $\mu\text{mhos/cm}$) and Sodium Adsorption Ratio (SAR) by watershed at selected United States Geological Survey (USGS) Gauging Stations in Table 3-11 (PRB FEIS page 3-49). These water quality parameters “illustrate the variability in ambient EC and SAR in streams within the Project Area. The representative stream water quality is used

in the impact analysis presented in Chapter 4 as the baseline for evaluating potential impacts to water quality and existing uses from future discharges of CBM produced water of varying chemical composition to surface drainages within the Project Area” (PRB FEIS page 3-48). For the Upper Powder River, the EC ranges from 1,797 at Maximum monthly flow to 3,400 at Low monthly flow and the SAR ranges from 4.76 at Maximum monthly flow to 7.83 at Low monthly flow. These values were determined at the USGS station located at Arvada, WY PRB FEIS page 3-49).

No natural springs are documented or recorded within the plan on development.

For more information regarding surface water, please refer to the PRB FEIS Chapter 3 Affected Environment pages 3-36 through 3-56.

3.6. Economics and Recovery of CBNG Resources

Development of this project would have effects on the local, state, and national economies. Based on the estimates in the PRBEIS, the drilling of the 104 proposed wells in the Carr Draw Federal POD III West will generate approximately 0.35 billion cubic feet of gas (BCFG) per well, over the life of the well. Actual revenue from this amount of gas is difficult to calculate, as there are several variables contributing to the price of gas at any given time. Regardless of the actual dollar amount, the royalties from the gas produced in the Carr Draw Federal POD III West would have wide-ranging benefit. The federal government collects 12.5% of the royalties from all federal wells, which helps offset the costs of maintaining the federal agencies that oversee permitting. In addition to generating federal income, approximately 49% of the royalties from the Carr Draw Federal POD III West wells would return to the State of Wyoming. This revenue from mineral development has contributed to Wyoming’s strong economy for the past several years, allowing for improvements in state funded programs such as infrastructure and education. The development of the Carr Draw Federal POD III West project would also provide revenue locally by employing an array of workers, both directly and indirectly. People would be employed to build the roads and project infrastructure, drill the wells, and maintain and monitor the project area. The large pool of individuals employed to work on the Carr Draw Federal POD III West project would also have the secondary effect of increased demand for goods and services from nearby communities, primarily those of NE, Wyoming.

3.7. Cultural Resources

A Class III cultural resource inventory was performed for the Carr Draw III West POD prior to on-the-ground project work (BFO project no. 70080163). Western Land Services, Inc., conducted a block class III cultural resource inventory following the Archeology and Historic Preservation, Secretary of the Interior's Standards and Guidelines (48CFR190) and the *Wyoming State Historic Preservation Office Format, Guidelines, and Standards for Class II and III Reports*. Clint Crago, BLM Archaeologist, reviewed the report for technical adequacy and compliance with Bureau of Land Management (BLM) standards, and determined it to be adequate. The following resources are located in or near the project area.

Table 3.12 Cultural Resources Inventory Results

Site Number	Site Type	Eligibility
48CA5126	Prehistoric Lithic Scatter	Not Eligible
48CA5127	Prehistoric Lithic Scatter	Not Eligible
48CA5129	Prehistoric Lithic Scatter and Historic Artifact	Not Eligible

Site Number	Site Type	Eligibility
48CA5130	Prehistoric Lithic Scatter	Not Eligible
48CA5131	Prehistoric Lithic Scatter	Not Eligible
48CA5132	Prehistoric Lithic Scatter	Not Eligible
48CA5810	Prehistoric Lithic Scatter	Eligible
48CA5811	Prehistoric Lithic Scatter	Not Eligible
48CA5812	Historic Homestead	Not Eligible
48CA5813	Prehistoric Lithic Scatter	Not Eligible
48CA5820	Prehistoric Lithic Scatter	Not Eligible
48CA5821	Prehistoric Lithic Scatter	Not Eligible
48CA5822	Prehistoric Lithic Scatter	Not Eligible
48CA5823	Prehistoric Lithic Scatter	Not Eligible
48CA5824	Prehistoric Lithic Scatter	Not Eligible
48CA5825	Historic Debris	Not Eligible
48CA5826	Prehistoric Artifact and Historic Debris	Not Eligible
48CA5827	Prehistoric Lithic Scatter	Not Eligible
48CA5828	Prehistoric Lithic Scatter	Not Eligible
48CA5829	Historic Debris	Not Eligible
48CA5832	Prehistoric Lithic Scatter	Not Eligible
48CA5833	Prehistoric Lithic Scatter	Not Eligible
48CA5834	Historic Can Scatter	Not Eligible
48CA5835	Prehistoric Lithic Scatter	Not Eligible
48CA5836	Prehistoric Lithic Scatter	Not Eligible
48CA5837	Prehistoric Lithic Scatter	Not Eligible
48CA5838	Prehistoric Artifact and Historic Debris	Not Eligible
48CA5839	Prehistoric Lithic Scatter	Not Eligible
48CA5840	Prehistoric Lithic Scatter	Not Eligible
48CA5841	Prehistoric Lithic Scatter and Historic Debris	Not Eligible
48CA6112	Historic Homestead	Not Eligible
48CA6967	Historic Wooden Derrick	Not Eligible

3.8. Air Quality

Existing air quality throughout most of the Powder River Basin is in attainment with all ambient air quality standards. Although specific air quality monitoring is not conducted throughout most of the Powder River Basin, air quality conditions in rural areas are likely to be very good, as characterized by limited air pollution emission sources (few industrial facilities and residential emissions in the relatively small communities and isolated ranches) and good atmospheric dispersion conditions, resulting in relatively low air pollutant concentrations.

Existing air pollutant emission sources within the region include following:

- Exhaust emissions (primarily CO and nitrogen oxides [NO_x]) from existing natural gas fired compressor engines used in production of natural gas and CBNG; and, gasoline and diesel vehicle tailpipe emissions of combustion pollutants;
- Dust (particulate matter) generated by vehicle travel on unpaved roads, windblown dust from neighboring areas and road sanding during the winter months;
- Transport of air pollutants from emission sources located outside the region;
- Dust (particulate matter) from coal mines;
- NO_x, particulate matter, and other emissions from diesel trains and,
- SO₂ and NO_x from power plants.

For a complete description of the existing air quality conditions in the Powder River Basin, please refer to the PRB Final EIS Volume 1, Chapter 3, pages 3-291 through 3-299.

4. ENVIRONMENTAL CONSEQUENCES

The changes to the proposed action (Alternative B) resulted in development of Alternative C and D. These changes have reduced impacts to the environment which will result from this action therefore a combination of Alternative C and Alternative D are evaluated below, as the preferred alternative.

4.1. Alternative C

4.1.1. Vegetation & Soils Direct and Indirect Effects

The effects to soils resulting from well pad, access roads and pipeline construction include:

- Mixing of horizons – occurs where construction on roads, pipelines or other activities take place. Mixing may result in removal or relocation of organic matter and nutrients to depths where it would be unavailable for vegetative use. Soils which are more susceptible to wind and water erosion may be moved to the surface. Soil structure may be destroyed, which may impact infiltration rates. Less desirable inorganic compounds such as carbonates, salts or weathered materials may be relocated and have a negative impact on re-vegetation. This drastically disturbed site may change the ecological integrity of the site and the recommended seed mix.
- Loss of soil vegetation cover, biologic crusts, organic matter and productivity. With expedient reclamation, productivity and stability should be regained in the shortest time frame.
- Soil erosion would also affect soil health and productivity. Erosion rates are site specific and are dependent on soil, climate, topography and cover.

- Soil compaction – the collapse of soil pores results in decreased infiltration and increased erosion potential. Factors affecting compaction include soil texture, moisture, organic matter, clay content and type, pressure exerted, and the number of passes by vehicle traffic or machinery. Compaction may be remediated by plowing or ripping.
- Modification of hill slope hydrology.
- An important component of soils in Wyoming’s semiarid rangelands, especially in the Wyoming big sagebrush cover type, are biological soil crusts, or cryptogamic soils that occupy ground area not covered with vascular plants. Biological soil crusts are important in maintaining soil stability, controlling erosion, fixing nitrogen, providing nutrients to vascular plants, increasing precipitation infiltration rates, and providing suitable seed beds (BLM 2003). They are adapted to growing in severe climates; however, they take many years to develop (20 to 100) and can be easily disturbed or destroyed by surface disturbances associated with construction activities.

These impacts, singly or in combination, would increase the potential for valuable soil loss due to increased water and wind erosion, invasive/noxious/poisonous plant spread, invasion and establishment, and increased sedimentation and salt loads to the watershed system.

The operator will follow the guidance provided in the Wyoming Policy on Reclamation (IM WY-90-231). The Wyoming Reclamation Policy applies to all surface disturbing activities. Authorizations for surface disturbing actions are based upon the assumptions that an area can and ultimately will be successfully reclaimed. BLM reclamation goals emphasize eventual ecosystem reconstruction, which means returning the land to a condition approximate to an approved “Reference Site” or NRCS Ecological Site Transition State. Final reclamation measures are used to achieve this goal. BLM reclamation goals also include the short-term goal of quickly stabilizing disturbed areas to protect both disturbed and adjacent undisturbed areas from unnecessary degradation. Interim reclamation measures are used to achieve this short-term goal.

Cumulative Effects: Most soil disturbances would be short term impacts with expedient, successful interim reclamation and site stabilization, as committed to by the operator in their POD Surface Use Plan and as required by BLM in COAs.

Impacts to vegetation and soils from surface disturbance will be reduced by following the operator’s plans and BLM applied mitigation.

1. 20 locations will have a 30 day stabilization COA and are described in detail within the Carr Draw Federal POD III West Reclamation Management Plan. In addition, 4 locations are not included within the Carr Draw Federal POD III West Reclamation Management Plan and are the 34-3BG/W, 11-10BG/W, 44-11BG/W, and the 12-27BG/W. The 30 day stabilization COA will apply to both the location and the access for these additional 4 locations. The summary below lists all 24 locations with the 30 day stabilization COA:

30 Day COA Stabilization COA:	Well #:
Applied to both the location and access	34-3BG/W, 14-9BG/LW, 21-10BG/W, 11-10BG/W, 44-11BG/W, 22-11BG/W, 12-15BG/W, 42-23BG/W, 12-27BG/W, 33-27BG/W, 43-14BG/W, 14-10BG/W, 43-3BG/W
Applied to only the location	23-23BG/W, 43-27BG/W, 23-9BG/W
Applied to only the access	34-9BG/LW, 32-22BG/W, 31-22BG/W, 14-23BG/W,

30 Day COA Stabilization COA:	Well #:
	22 -23BG/W , 21-27BG/W, 11-14BG/W, 43-9BG/W

2. The following 3 locations will have utilities and or access coming from the Carr Draw IV POD to the South:

All gas and water will go to the south to the Carr IV POD. The access will be from the Carr Draw Federal POD III West.	33-27BG/W, 43-27BG/W
All gas and water will go to the south to the Carr IV POD. The access will be from the Carr Draw Federal POD IV.	12-27BG/W

3. The following 4 locations will utilize existing vegetation and topography to mitigate for the elk view shed:

Site Specific COA:	Well #:
The operator will utilize the mature trees surrounding the location as well as topographic features (i.e. hillside, ridges) to mitigate for the elk view shed.	32-3BG/W, 43-9BG/W, 42-10BG/W , 13-3BG/W

4. The following 3 locations will be dead end locations:

Site Specific COA:	Well #:
The access road will dead end at the location and needs to be signed accordingly.	14-10BG/W, 33-15BG/W, 12-15BG/W

5. The colors for the POD Infrastructure will be either Juniper Green or Covert Green and will be chosen on a site specific basis per location depending on the dominant vegetation. There are many areas within the project that are dominated by Juniper and other pine species, Juniper Green will be used in these areas. The areas that are dominated by sagebrush will be painted Covert Green:

Environmental Color:	Well #:
Covert Green (40 locations)	14-2BG*/W, 23-2BG/GW, 32-3BG/W, 23-3BG/W, 41-3BG/GW, 43-3BG/W, 14-9BG/LW, 34-9BG/LW, 23-9BG/LW, 43-9BG/W, 32-10BG/W, 11-10BG/W, 41-10BG/W, 11-14BG/W, 21-11BG/W, 43-11BG/W, 44-11BG/W, 22-11BG/W, 34-14BG/W, 31-14BG/W, 23-14BG/W, 14-15BG/W, 12-15BG/W, 33-15BG/W, 42-15BG/W, 41-15BG/W, 12-22BG/LW, 32-22BG/W, 31-22BG/W, 21-22BG/W, 14-23BG/W, 12-23BG/W, 21-23BG/W, 23-23BG/W, 42-23BG/W, 12-26BG/W, 12-27BG/W, 41-27BG/W, 21-27BG/W, 43-27BG/W
Juniper Green (12 locations)	12-3BG/W, 21-3BG/GW, 13-3BG/W, 34-3BG/W, 21-10BG/W, 14-10BG/W, 41-10BG/W, 34-11BG/W, 22-14BG/W, 43-14BG/W, 22-23BG/W, 33-27BG/W

-All other infrastructure such as POD buildings and meter buildings will be painted Covert Green.

6. 14-9BG/LW: The pad will be constructed to fit the topography and will not affect the tree to the east as well as the blowout adjacent to the tree to the west.
7. 42-23BG/W: The well location will be built to accommodate and avoid the tree to the east, the erosion feature to the south, and will maintain a 20' foot vegetated buffer from the draws to the west.

8. 34-3BG/W: The operator will maintain the integrity of the ridge on the south side of the location to create a natural buffer to mitigate for the elk view shed.
9. 12-15BG/W: Williams will use road base gravel instead of scoria for the access road to this well.
10. 32-22BG/W: The location will require less than two foot of fill on the south west side of the location. Where fill will be borrowed from the north end of the location, the natural buffer shall be left intact.
11. 14-10BG/W: The trees surrounding the pad will also be used to mitigate for the elk view shed and will also serve as a marker for the outer edge of disturbance. To accomplish this access road will come in from the NW off of the existing corridor, on a natural contour using the trees to mitigate for the elk view shed and will curve gently into the cut of the pad.
12. 31-22BG/W: Due to the proximity to a raptor nest, the access road width will be no greater than 12' feet wide on the ridge prior to descending into the well location, at this location the road will not cut into the base of the knoll adjacent to the originally proposed location. The road will need to be surfaced from the knoll to the well.
13. 22-23BG/W: The toe of the fill needs to be out of the drainage. A 20' foot vegetated buffer will apply to the location.
14. 23-23BG/W: The crushed scoria may enhance weed growth, therefore a plan addressing how weeds will be controlled and how the scoria will be re-contoured for final reclamation will be needed.
15. 23-23BG/W: The location will be used as a potential staging area for the wells to the north. The location will be built no larger than the original proposed 0.99 acres. The pad will incorporate the adjacent main corridor and will resemble an eyebrow location.
16. 14-10BG/W/12-15BG/W: The existing corridor from the 14-10 to the 12-15 location will not be used for travel but will be used for a utility corridor, and will be signed accordingly. No vehicle travel will be allowed on this corridor outside of the construction phase. However, upon an emergency (those necessary to protect health and safety) the operator will notify the BLM authorized officer. The operator will adhere to the Carr Draw Federal POD III West Reclamation Management Plan: Site Specific Reclamation Areas, Segment 23
17. The operator will be required to monitor and record the frequency of site visits to individual wells and facilities for the first six months of production immediately following construction of the wells and facilities. These reports will be submitted by the operator at the end of each month to the BLM BFO. The monthly reports will include: The reason for the well visit, any problems identified, any repairs or actions made during the well visits, the date, time, and duration of the well visit. Actions that are covered under 43 CFR 3162.3-2 (a) Subsequent well operations, as they will be submitted through sundry. At the end of the six month reporting period the operator will submit a travel plan based on the well reports to be approved by the BLM BFO.
18. The operator will seed the Carr Draw Federal POD III West with the seed mixes identified within the Carr Draw Federal POD III West Reclamation Management Plan. Seed Mix A, B, or C will be used depending on the site specific soil type, identified in attachment A and B within the Carr Draw Federal POD III West Reclamation Management Plan.

Proposed stream crossings, including culverts and fords (low water crossings) are shown on the MSUP and the WMP maps (see the POD). These structures would be constructed in accordance with sound, engineering practices and BLM standards.

The PRB FEIS made predictions regarding the potential impact of produced water to the various soil types found throughout the Basin, in addition to physical disturbance effects. “Government soil experts state that SAR values of 13 or more cause potentially irreversible changes to soil structure, especially in clayey soil types, that reduce permeability for infiltration of rainfall and surface water flows, restrict root growth, limit permeability of gases and moisture, and make tillage difficult.” (PRB FEIS page 4-144).

The designation of the duration of disturbance is defined in the PRB FEIS (pg 4-1 and 4-151). “For this EIS, short-term effects are defined as occurring during the construction and drilling/completion phases. Long-term effects are caused by construction and operations that would remain longer”.

4.1.2. Wetland/Riparian

There will be no effects to wetland/riparian areas in this POD. This is due to the lack of established wetland/riparian environments in the POD area and the proposal of all water being transferred into existing water management infrastructure.

4.1.3. Invasive Species

The operator has committed to the control of noxious weeds and species of concern using the following measures identified in their Integrated Pest Management Plan (IPMP) for the Carr Draw Federal POD III West:

- Cultural

Methods of control and prevention will be re-seeding, mulching, vehicle and equipment maintenance, and surface disturbance as detailed in the IPMP.

- Physical

Methods of control and prevention include physically mowing and hand pulling weeds (for small or new infestations).

- Biological

Biological methods of control and prevention such as domestic animal use and approved biological control agents will be used.

- Chemical

Herbicides are another method of control and prevention that may be used to treat weeds.

- Education

Weed education awareness programs include; identifying weeds and reporting weed infestations to the project manager.

Cheatgrass or downy brome (*Bromus tectorum*) and to a lesser extent, Japanese brome (*B. japonicus*) are known to exist in the affected environment. These two species are found in such high densities and numerous locations throughout NE Wyoming that a control program is not considered feasible at this time.

The use of existing facilities along with the surface disturbance associated with construction of proposed access roads, pipelines, water management infrastructure, produced water discharge points and related facilities would present opportunities for weed invasion and spread. Produced CBNG water would likely continue to modify existing soil moisture and soil chemistry regimes in the areas of water release and

storage. The activities related to the performance of the proposed project would create a favorable environment for the establishment and spread of noxious weeds/invasive plants such as salt cedar, Canada thistle, Scotch thistle, Leafy spurge, and perennial pepperweed. However, mitigation as required by BLM applied COAs will reduce potential impacts from noxious weeds and invasive plants.

4.1.4. Cumulative Effects

The PRB FEIS stated that cumulative impacts to soils and vegetation could occur due to sedimentation from water erosion that could change water quality and fluvial characteristics of streams and rivers in the sub-watersheds of the Project Area. SAR in water in the sub-watersheds could be altered by saline soils because disturbed soils with a conductivity of 16 mmhos/cm could release as much as 0.8 tons/acre/year of sodium (BLM 1999c). Soils in floodplains and streambeds may also be affected by produced water high in SAR and TDS. (PRB FEIS page 4-151).

As referenced above, the PRB FEIS did disclose that cumulative impacts may occur to soils and vegetation as a result of discharged produced CBNG water. The cumulative effects on vegetation and soils are within the analysis parameters and impacts described in the PRB FEIS for the following reasons:

- They are proportional to the actual amount of cumulatively produced water in the Upper Powder River drainage, which is approximately 31% of the total predicted in the PRB FEIS.
- The WDEQ enforcement of the terms and conditions of the WYPDES permit that are designed to protect irrigation downstream.
- The WMP for the Carr Draw III West proposes that produced water will not contribute significantly to flows downstream.

4.1.5. Wildlife

4.1.5.1. Big Game Direct and Indirect Effects

Big game in the area including elk, mule deer, and pronghorn antelope, can be expected to respond in similar fashion. However, deer and pronghorn do not move as easily as elk through deep snow, so winter disturbance could impact these smaller individuals more severely. Under the environmentally preferred alternative, Yearlong range for elk and pronghorn antelope and Winter/Yearlong range for mule deer, will be directly disturbed by the construction of wells, pipelines, and roads resulting in habitat loss. The most important difference between the elk herd and deer or antelope herds is that the Fortification Creek elk are a relatively isolated herd.

Table 3.5 summarized the proposed activities associated with the development of the Carr Draw III West POD; items identified as long term disturbance would result in direct habitat loss. Short-term disturbances will also result in direct habitat loss as vegetative cover is removed. Short term disturbances may provide some habitat value as these areas are reclaimed and native vegetation becomes established. However, they may also increase vehicular collision when adjacent to roads.

In addition to the direct habitat loss, big game would likely be displaced from the project area during drilling and construction. A study in central Wyoming reported that mineral drilling activities displaced mule deer by more than 0.5 miles (Hiatt and Baker 1981). The WGFD indicates a well density of eight wells per section creates a high level of impact for big game and that avoidance zones around mineral facilities overlap creating contiguous avoidance areas (WGFD 2004).

Big game animals are expected to return to the project area following drilling and construction activities; however, populations will likely be lower than prior to project implementation as the human activities associated with operation and maintenance continue to displace big game. Elk and mule deer are more sensitive to operation and maintenance activities than pronghorn.

The Pinedale Anticline study (Sawyer, H., R. Nielson, D. Strickland and L. McDonald. 2005) suggests mule deer do not readily habituate. A study in North Dakota stated “Although the population (mule deer) had over seven years to habituate to oil and gas activities, avoidance of roads and facilities was determined to be long term and chronic” (Lustig 2003). Deer have even been documented to avoid dirt roads that were used only by 4-wheel drive vehicles, trail bikes, and hikers (Jalkotzy et al. 1997).

Winter big game diets are sub-maintenance, meaning they lose weight and body condition as the winter progresses. Survival below the maintenance level requires behavior that emphasizes energy conservation. Canfield et al. (1999) pointed out that forced activity caused by human disturbance exacts an energetic disadvantage, while inactivity provides an energetic advantage for animals. Geist (1978) further defined effects of human disturbance in terms of increased metabolism, which could result in illness, decreased reproduction, and even death.

Reclamation activities that occur within big game habitats during the spring will likely displace does and fawns due to the human presence in the area. This may cause reduced survival rate of does and fawns that must expend increased energies to avoid such activities.

Timing limitation stipulations for drilling, construction and other activities with the exception of well monitoring will be applied to protect elk during critical winter and calving periods for those portions of the project area within the identified ranges. However, it is anticipated that big game will continue to avoid those areas frequented by human disturbance during the production phase of the CBNG development.

Elk

In a letter dated August 31, 2009, WGFD commented to the BLM: “Efforts should be made to decrease disturbance on crucial winter and parturition ranges by implementing seasonal stipulations and/or limiting visits. Design of the gas field should be to avoid or reduce miles of roads and numbers of well pad sites within existing security habitat areas and/or remove unneeded roads to create security patches” (John Emmerich, WGFD Deputy Director, to Duane Spencer, BFO Field Manager, 2009). In reference to the Carr Draw III West POD, WGFD provided written comment indicating their preferred goal is to maintain the security habitat function of this area (Bud Stewart, email to author, August 29, 2009).

Direct Habitat Loss

Water drawdown for gas production could conceivably interrupt spring flow (Powder River Basin Oil and Gas EIS-Technical Report-Groundwater Modeling pg 6-39) to some of the existing springs and seeps in the area that the elk currently depend on as a free water source, thereby degrading the existing habitat. The Wyoming State Engineers Office and the operator’s WMP shows one permitted spring that could be affected.

Security Habitat/Habitat Effectiveness

Indirect disturbance from human activity is probably the largest potential impact from the proposed action. The PRB FEIS used “habitat effectiveness” - the degree to which habitat features fulfill specific habitat functions; the degree to which a species or population is able to continue using a habitat for a specific function, to assess the effect of human disturbance on elk populations. For elk, the habitat effectiveness of areas within 0.5 miles of an active area such as a road or well would be reduced. In Powell's study on elk response to oil and gas development in the Jack Morrow Hills area of southwestern Wyoming, elk avoided areas within 2 kilometers (1.25 miles) of active roads (Powell, 2003).

As of May, 2009, 37,874 acres of security habitat (15 patches) remained in the Yearlong range; 4,159 contiguous acres within the vicinity of the Carr Draw III West POD and 942 acres within the project area boundary (a contiguous patch of 926 acres entirely within the project area). From 2005 to 2009, 557 acres (2 patches) of elk security habitat have been lost within the vicinity of the Carr Draw III West POD and 27% of the elk security within the POD has been lost due to non-federal oil development. See Figure 3.1.

In an attempt to quantify the loss, both actual and functional, of crucial elk habitat (i.e., crucial winter range and parturition areas) in the Fortification Creek area resulting from CBNG development, a geographic information system (GIS) model was prepared to portray the physiographic and elk habitat data. Key assumptions were used in the development of the model:

- The ability of elk to see CBNG development activities within a certain distance (0.5 mile and 1.25 mile) resulted in the non-use/lost functionality (i.e., lack of security) of the intervening habitat;
- Secure elk habitat was defined as those blocks of contiguous habitat >250 acres in size that would be unaffected by CBNG activities (Christensen et al. 1991, Leege 1984); and
- The presence of gas field roads and well pads (excluding the WSA) would be the parameter of measurement for development.

It can be assumed that similar effects would occur from the activities associated with the federal development. In order to monitor the effects, a Condition of Approval will be applied requiring the operator to submit a monthly work report that, in conjunction with monitoring the collared elk, will enable elk responses to be evaluated for possible adaptive management alternatives development.

CBNG development fragments habitats through placement of linear facilities such as roads and pipelines. The impacts from fragmentation can vary depending on the use of the feature. For example, a road used daily would displace elk by reducing habitat effectiveness as well as fragmenting habitat. The placement of linear elements can also act as vectors routes for the establishment of invasive plant species (e.g., Japanese brome and leafy spurge) that can reduce the forage value of the area by out competing native plants, and in the case of brome, increase the potential for wildfire (BLM 2006).

Directly adjacent to the project area, Lance Oil and Gas Company Inc. mobilized drilling and construction equipment within the Augusta Unit project area for non-federal CBNG development beginning May 2008 with the pace of activities decreasing in October 2008. Data collected from the 38 GPS collared elk (collared in March 2008) indicate that 4 collared elk were displaced from the activity occurring within the Augusta Unit, traveling up to 16 miles. Following a reduction in activities as wells were completed, the operator's activities were restricted by the landowners during the hunting season (Oct. 1-Oct. 20). Only 1 collared elk relocated within the Augusta Unit after 7 months. Of the 4 collars, one failed to relay a GPS signal after May 2, 2008. Another collar was recovered from a dead elk December 6, 2008 and redeployed December 7, 2008.

Data from the GPS collars recorded 1,674 elk observations within the Carr Draw III West project area over an 18 month window from March 2008 to August 2009. During this time period 14 individual collared elk were documented within the project area. Eight of these collars were deployed during the collaring operation conducted March 2008 and the other six collars were deployed December 2008. Three of the collars from the eight deployed in March 2008 have since failed (one in May 2008 and two in June 2008).

The foreseeable development within the Carr Draw III West project area includes an additional 109 wells, at 55 locations, resulting in a well density of 6.3 wells per section. Proposed project elements that are

anticipated to impact the Fortification elk herd: 109 CBNG wells on 55 locations, 23.54 miles of new roads, 1.82 miles of new pipelines, increased vehicle traffic on established roads and increased noise from compressor stations. There are five proposed well locations within the elk crucial winter range, which create approximately 10.5 acres of surface disturbance associated with the well pads, access roads and ancillary infrastructure. The operator proposes 34 of the well locations within the elk parturition range and approximately 119.4 acres of surface disturbance associated with the well pads, access roads and ancillary infrastructure.

A view shed analysis utilizing the geographic information system (GIS) model was conducted to determine habitat effectiveness within the Carr Draw III West project boundary following the field visits confirming the existing oil and gas roads. The following statistics summarize the outcome of the habitat effectiveness analysis:

- Effective habitat existing prior to initiating non-federal oil development was approximately 1,676 acres or 28.3% of the Carr Draw III West project area, with 2 parcels in excess of 250 acres.
- Security habitat (250 contiguous acres of effective habitat) existing prior to oil development was approximately 1,648 acres or 27.8% of the project area.
- Security habitat remaining following non-federal CBNG and oil development in the project area is approximately 926 contiguous acres (15.6% of the project area).
- Prior to the proposed federal CBNG development the habitat effectiveness within the southern half of the project area had been compromised by oil wells and access roads that have fragmented the security habitat and reduced connectivity.
- Since the completion of the Environmental Report, 1 elk security patch of 350 acres (21.2%) within the Carr Draw III West POD has been lost due to impacts associated with non-federal oil development.
- Loss of security habitat anticipated with the implementation of the operator's federal CBNG development, as proposed in Alternative C, is 100% within the Carr Draw III West POD.

The Carr Draw III West POD is expected to affect elk occupying the Fortification Creek area and the immediate surrounding habitat. There is likely to be a larger amount of habitat effectiveness loss due to avoidance and displacement of animals and their altered behavior reacting to the CBNG activities with most of this occurring during the actual development stages.

Movement patterns of the elk differ for those elk captured north of Fortification Creek versus those elk captured south of Fortification Creek. Typically, those elk captured in the northern portion of the elk Yearlong range stay north of Fortification Creek where as the elk captured in the southern portion of the Yearlong range tend to roam more between the north and south halves of the Yearlong range. Nine (50%) of the 18 elk collared south of Fortification Creek spent considerable time north of Fortification Creek (April 1, 2008 - July 17, 2009), with 37% of the locations from these 'southern' elk being north of Fortification Creek. While of 37 elk collared north of Fortification Creek only three (8%) spent much time south of Fortification Creek; only 4% of the locations from the 'northern' elk were south of Fortification Creek. Effective elk habitat along the southern boundary of the FCPA provides connectivity for these elk between the north and south halves of the elk Yearlong range. The Carr Draw III West project area lies at the southern boundary of the FCPA. Following nonfederal CBNG development was initiated within the Augusta Unit in May of 2008, more than half the collared elk that had been located within the Augusta Unit Zeta project areas left the area. As is consistent with the literature, less than 100% of the collared elk have returned to the project area to date. It is likely that connectivity of the effective habitat within the Augusta Unit Zeta POD has been compromised. Security habitat provides refuge for elk when stressed by human disturbance. It is likely that elk will also be displaced from the

Carr Draw III West project area by human disturbance for prolonged periods of time or avoided altogether with loss of security areas as occurred in the Augusta Unit Zeta project area.

Population

The effects of the proposed project on elk populations are difficult to predict because of the many unknown factors associated with each of the potential effects and the potential for a synergistic or countervailing relationship among the individual effects. Because determining the reaction of elk in the Fortification Creek area is difficult, it may be more appropriate to frame the potential cumulative effects of CBNG development to this species in terms of a likelihood, or probability. For this reason, the Environmental Report identified 3 scenarios; 1) mass abandonment of the entire Fortification Creek area (least probable), 2) complete habituation of CBNG activities (possible, but unlikely) and 3) reduced herd residing in Fortification Creek (most probable).

Because of their affinity for the Fortification Creek area and their wary nature, the most probable scenario for elk response to the proposed CBNG development is for the herd to seek out security patches within the Fortification Creek herd unit and attempt to avoid the CBNG activities, at least during the development stage. During the peak of development as proposed, road and facility construction and human activity is apt to be taking place on most of the ridges and in most of the drainages in the Carr Draw III West POD. The elk population is expected to be stressed and impacted almost continuously during the development phase. This level of impact will likely ease during the field production phase (BLM 2006).

While some habituation may occur over time, regardless, a reduction in the elk population through displacement should be expected. This disturbance is usually temporary in nature, however, and some studies have shown that elk returned to the area of disturbance once the source of disturbance and human presence was gone (Gussey 1986, WGFD 2000), albeit at 50% of the previous levels in forested environments (Hayden-Wing Associates 1990). It is also very likely the elk will shift their centers of distribution to the least impacted sites, such as the Wilderness Study Area (WSA). This trend is supported by data collected from 38 GPS collared elk within the Fortification Creek herd unit and the response to ongoing non-federal CBNG development. In an attempt to quantify this actual impact to the elk population, the recent and current collared elk studies were examined as a "benchmark reference" for gauging impacts. Of 26 collared elk in the 2005 elk monitoring study, four (4) of these animals (about 15%) have been observed to routinely venture outside the Fortification Creek area on sorties of one type or another, though most of them (3 of 4 = 75%) seasonally return. Expanded to the whole herd population, we would expect about 35 of the existing 230 head to venture outside the Fortification Creek area, at least occasionally. When monitoring the impacts of development on the elk population, it would be a concern if:

1. The current population trend, about 3% population decrease per year, were to precipitously decline (i.e., rapid rate increase)
2. The overall total herd population were to drop below an estimated 120 animals (about 52% of the current population)
3. The rate of elk ventures outside the Fortification Creek area were to drastically increase above 15% of the herd, and/or ...
4. The nature (i.e., longevity) of elk ventures outside the Fortification Creek area were to shift from mostly seasonal to mostly permanent

Another factor must be considered - when populations are reduced to near viability threshold levels, their small size can be an impact in itself. Small populations are subject to genetic inbreeding, and stochastic events such as fires, severe winter, disease, drought, etc. that make them intrinsically more vulnerable to extirpation (Soule 1986). Populations that are isolated, like the Fortification elk herd, are more sensitive to these internal (genetic) and external (stochastic) elements. In isolated populations, due to a closed gene

pool with no gene immigration, deleterious genes can become more prevalent through time. While gene pool isolation may be a possibility in the Fortification Creek herd, it is currently thought that there is enough interbreeding and genetic interchange with surrounding elk herds that this occurrence is a low likelihood (Jahnke, 2006). Stochastic events such as fires or severe winter storms can remove individuals from populations. In populations that are small in number and isolated, such events are magnified because there are proportionally fewer animals left with no potential for immigration into the population (BLM 2006).

There will be some additional mortality due to vehicular collisions and poaching (Jahnke, 2006), as has already been seen in other parts of the Powder River Basin (BLM 2006).

Mitigation

To minimize impacts to elk utilizing habitat affected by the proposed action, surface disturbing activities will be restricted from within identified elk critical winter range November 15 to April 30 and elk parturition range May 1 to June 30 for the life of the project.

BLM's goal is to minimize impacts to wildlife and their habitat. Through management decisions we become more conscious of the mechanisms driving shifts in wildlife behavior and habitat selection, and further understand the resulting effects of these behavioral shifts on fitness. Consequently, to properly mitigate the impacts of energy development on wildlife we must accrue knowledge of direct and indirect disturbances associated with energy development. These understandings will assist in creating more efficient conservation and management plans while still meeting energy demands. Beginning June 2009, the BLM in conjunction with the University of Wyoming has initiated a study to identify levels of direct and indirect disturbances that influence habitat selection by elk in the Fortification Creek Area (FCA). These findings will be documented in quarterly reports and along with the monthly work reports will facilitate adaptive management to minimize direct and indirect impacts on elk.

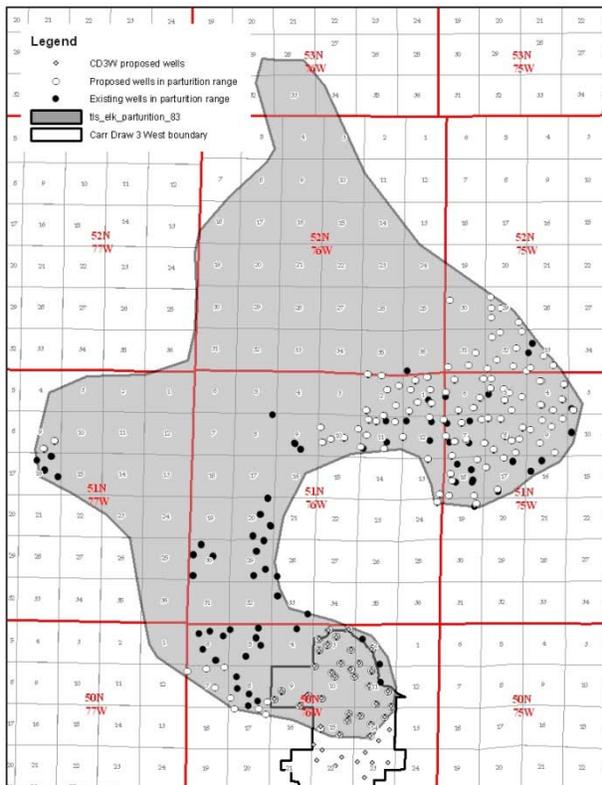
4.1.5.1.1. Big Game Cumulative Effects

In its *Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats* (2009), WGFD categorized levels of oil and gas development into thresholds that correspond to high and extreme impacts to habitat effectiveness for elk, based on well pad densities and acreages of disturbance. Both levels of impact result in a loss of habitat function by directly eliminating habitat; disrupting wildlife access to, or use of habitat; or causing avoidance and stress to wildlife. Impacts to elk are categorized by number of well pad locations per square mile within crucial winter ranges and parturition areas. High impacts occur when well density is between one and four well pad locations per square mile or when there is up to 60 acres of disturbance per square mile. High impacts to ungulate species generally mean that impacted zones surrounding each well pad, facility, and road corridor begin to overlap and habitat effectiveness is reduced over a much larger, contiguous area (WGFD 2009). Human, equipment and vehicular activity, noise and dust become much more frequent and intensive. Extreme impacts occur when well density exceeds four well pad locations per square mile or when there are greater than 60 acres of disturbance per square mile. Extreme impacts for ungulate species generally mean those where the function and effectiveness of crucial winter habitat will be severely compromised. Long-term consequences include fragmentation and disintegration of the winter range complex leading to decreased survival and ultimately, loss of carrying capacity for the herd. This will result in the ecological functions, recreation opportunity, and associated income to the State's economy (WGFD 2009).

There are four well locations proposed within crucial winter range. These four wells are located next to an existing improved road that services existing oil and gas projects throughout the crucial winter range. These four wells are not likely to increase impacts to elk further than the impacts already associated with this road.

Approximately 3,167 acres of parturition range occurs throughout the northern half of the project area. Existing and proposed well locations throughout the entire parturition range is shown in Figure 1. There are currently 65 well locations within the entire parturition range, an area of 92.6 square miles. Sixty-one of these well locations are within the eastern portions of the parturition range in area approximately 34.3 square miles. The existing well density within this area is 2 wells per square mile. There are no existing well locations within the parturition range within the project area. With the addition of the 34 well locations associated with the Carr Draw III West POD, well density within the project area would instantly become 6.9 well locations per square mile, well above the threshold of 4 wells per square mile for extreme impacts. Through project proposals and modifications, Williams Production RMT Company has incorporated nearly all mitigation recommended by the WGF D for high impacts to elk parturition range. Those portions not proposed include a travel plan, habitat treatments, and off-site mitigation. The operator will be required to submit a travel plan that minimizes frequency of trips on well field roads. The operator will also be required to submit a monthly work report that in conjunction with monitoring the collared elk will enable elk responses to be evaluated for possible adaptive management alternatives development.

Figure 1
Existing and proposed well location within the entire Fortification Creek parturition range.



Bromley (1985) provides a good overview of the type and nature of environmental impacts of conventional petroleum exploration and development on wildlife in general, as well as the implications of wildlife management in this kind of an industrial setting. An annotated bibliography was also provided in this synopsis. While the focus of this document was on conventional petroleum field activities, the nature of the environmental impacts is essentially the same for CBNG development and production, though the pace and duration of the impacts could vary significantly in the FCPA.

Southerland (1993) characterizes the type of impacts to habitat based on general effects categories, as follows: 1.) Habitat loss / destruction; 2.) Habitat fragmentation; 3.) Habitat simplification; and 4.) Habitat degradation. These general effects categories are further defined as follows:

Habitat Loss / Destruction – the destruction of a natural ecosystem through its "conversion" to another land use. In each conversion, the original natural characteristics of the land are eliminated, while the associated habitat values are modified to varying degrees, or totally lost. Physical alterations of many kinds can cause destruction.

Habitat Fragmentation – the breaking of larger blocks of habitat into smaller blocks in a fashion that destroys the unit integrity and functionality of the habitat for "area sensitive" species.

Habitat Simplification – the removal of ecosystem components (e.g., standing dead trees, cover logs, stream debris, sensitive submerged plants, etc.) and the loss of microhabitats (e.g., nests and dens, etc.) that are rendered unusable by human intrusion.

Habitat Degradation – the decrease in the health or ecological integrity of "intact" habitats (e.g., chemical contamination, drawdown of aquifers, invasion of exotic plants and animals, etc.).

Any or all of these various forms of impacts may play out, either singularly, additively, or with multiplicity in the Fortification Creek area.

The Powder River Basin FEIS thoroughly addresses the regional impacts of CBNG development and production on wildlife species and their habitat surrounding the Fortification Creek area however the PBR-FEIS did not analyze in detail the potential effects from these activities to the Fortification elk herd and their habitat. The discussion presented in this evaluation leans heavily on the Report entitled "Environmental Report: Coalbed Natural Gas Effects on the Fortification Creek Area Elk Herd" (BLM 2007).

4.1.5.2. Aquatics Direct and Indirect Effects

Impacts to aquatics are discussed in the PRB FEIS on pp. 4-235 to 4-247.

Produced water will be treated and piped to the Powder River and at outfalls previously approved in the Waterline Sundry, Somerville Waterline Sundry 1 and Somerville Waterline Sundry 2.

Because the Carr Draw III West POD does not include any changes to existing or approved water management, no additional impacts to aquatic communities are expected to occur as a result of implementation of the Carr Draw III West POD.

4.1.5.2.1. Aquatics Cumulative Effects

The cumulative effects associated with Alternative C and D are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, refer to the PRB FEIS, (pp. 4-247 to 4-249). No additional mitigation measures are required.

4.1.5.3. Migratory Birds Direct and Indirect Effects

Direct and indirect effects to migratory birds are discussed in the PRB FEIS (pp. 4-231 to 4-235).

Disturbance of habitat within the project area is likely to impact migratory birds. Native habitats will be lost directly with the construction of wells, roads, and pipelines. Reclamation and other activities that occur in the spring may be detrimental to migratory bird survival. Prompt re-vegetation of short-term disturbance areas should reduce habitat loss impacts. Activities will likely displace migratory birds farther than the immediate area of physical disturbance. Drilling and construction noise can be troublesome for songbirds by interfering with the males' ability to attract mates and defend territory, and the ability to recognize calls from conspecifics (BLM 2003).

Habitat fragmentation will result in more than just a quantitative loss in the total area of habitat available; the remaining habitat area will also be qualitatively altered (Temple and Wilcox 1986). Ingelfinger (2004) identified that the density of breeding Brewer's sparrows declined by 36% and breeding sage sparrows declined by 57% within 100 m of dirt roads within a natural gas field. Effects occurred along roads with light traffic volume (<12 vehicles per day). The increasing density of roads constructed in developing natural gas fields exacerbated the problem creating substantial areas of impact where indirect habitat losses through displacement were much greater than the direct physical habitat losses.

Those species that are edge-sensitive will be displaced further away from vegetative edges due to increased human activity, causing otherwise suitable habitat to be abandoned. If the interior habitat is at carrying capacity, then birds displaced from the edges will have no place to relocate. One consequence of habitat fragmentation is a geometric increase in the proportion of the remaining habitat that is near edges (Temple 1986). In severely fragmented habitats, all of the remaining habitat may be so close to edges that no interior habitat remains (Temple and Cary 1988). Over time, this leads to a loss of interior habitat species in favor of edge habitat species. Other migratory bird species that utilize the disturbed areas for nesting may be disrupted by the human activity, and nests may be destroyed by equipment.

Migratory bird species within the Powder River Basin nest in the spring and early summer and are vulnerable to the same effects as sage-grouse and raptor species as discussed later in this document. Though no timing restrictions are typically applied specifically to protect migratory bird breeding or nesting, where sage-grouse or raptor nesting timing limitations are applied, nesting migratory birds are also protected. Where these timing limitations are not applied and migratory bird species are nesting, migratory birds remain vulnerable.

4.1.5.3.1. Migratory Birds Cumulative Effects

The cumulative effects associated with Alternative C and D are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, refer to the PRB FEIS, pg. 4-235. No additional mitigation measures are required.

4.1.5.4. Raptors Direct and Indirect Effects

Human activities in close proximity to active raptor nests may interfere with nest productivity. Romin and Muck (1999) indicate that activities within 0.5 miles of a nest are prone to cause adverse impacts to nesting raptors. If mineral activities occur during nesting, they could be sufficient to cause adult birds to remain away from the nest and their chicks for the duration of the activities. This absence can lead to overheating or chilling of eggs or chicks and can result in egg or chick mortality. Prolonged disturbance can also lead to the abandonment of the nest by the adults. Routine human activities near these nests can also draw increased predator activity to the area and resulting in increased nest predation.

To reduce the risk of decreased productivity or nest failure, the BLM BFO requires a 0.5 mile radius timing limitation during the breeding season around active raptor nests and recommends all infrastructure requiring human visitation be located in such a way as to provide adequate biologic buffer for nesting raptors. A biologic buffer is a combination of distance and visual screening that provides nesting raptors with security such that they will not be flushed by routine activities.

Well 21-10 was originally proposed 0.17 mile to the northeast of nest 3727 and directly within line-of-sight, looking directly at the nest. To reduce visual impacts to this nest, the well was moved to the other side of the ridgeline and approximately 447 feet south, thereby placing it out of line-of-sight of the nest but still within 0.25 miles. The access road was also moved, which placed traffic out of line-of-sight of the nest from the well location all the way to well the main access road and well 32-10. The layout of the pad for 34-3 location, though not relocated, was adjusted to leave a natural ridge on the south side of the location, keeping it out of line-of-sight of the nest. These adjustments will also minimize noise

disturbance associated with construction and maintenance, as the topography will create natural sound barriers between the well and the nest. These changes will reduce impacts associated with both visual disturbance and noise disturbance to nest 3727.

Well 43-9 was relocated approximately 977' south to a junction of three roads and to a distance of 0.25 mile from nest 3724. This adjustment will consolidate disturbance and provide a larger buffer around the nest.

Well 41-22 was proposed 0.22 mile southwest and within line-of sight of nest 3939. This well was relocated approximately 401' east southeast to a location that allowed for a hilltop barrier between the well and the nest. Though the well is now closer to the nest, located at an approximate 0.19 mile distance, this change will reduce impacts associated with both visual disturbance and noise disturbance to nest 3939.

Table 4.1 Proposed and existing infrastructure within 0.5 mile of documented raptor nests within the Carr Draw III West project area

BLM ID	Infrastructure
5854	<ul style="list-style-type: none"> • 1 existing water pipeline segment • 1 exiting improved road segment • 1 existing improved road w/ an existing utility corridor segment
3727	<ul style="list-style-type: none"> • 5 well locations (21-10, 32-10, 34-3, 41-10, and 42-10) • 2 existing primitive road segments– 1 proposed for a template road and a portion of the other proposed for an engineered road
3724	<ul style="list-style-type: none"> • 3 well locations (23-9, 34-9, and 43-9) • 1 existing primitive road segment • 1 existing improved road with existing utility corridor segment • 2 existing primitive road w/ proposed utility corridor segments
6348	<ul style="list-style-type: none"> • 1 existing primitive road segment • 1 proposed water pipeline segment • 1 proposed improved road segment • 1 proposed overhead power segment
4125	<ul style="list-style-type: none"> • 4 wells (14-15, 21-22, 32-22, 12-22) • 1 proposed water pipeline segment • 1 existing improved road w/ proposed utility corridor segment • 3 existing primitive road segments – 2 proposed for template roads • 1 existing overhead powerline segment • 1 proposed overhead powerline segment • 2 elevated water crossings • 1 proposed POD building • 1 existing oil well
3939	<ul style="list-style-type: none"> • 4 wells (33-15, 31-22, 12-23, 32-22) • 3 existing primitive road segments – 2 portions proposed for template roads • 1 existing oil pipeline • 1 proposed overhead powerline segment

BLM ID	Infrastructure
3729	<ul style="list-style-type: none"> • 6 wells (41-15, 42-15, 11-14, 22-14, 23-14, 34-14) • 2 proposed primitive road w/ proposed utility corridor segments • 3 existing primitive road segments – 1 segment with portions of engineered road, portions of template road and a spot upgrade proposed • 1 existing oil pipeline segment
3717	<ul style="list-style-type: none"> • 3 wells (34-14, 22-23, 43-23) • 1 existing primitive road w/ proposed utility corridor segment
6340	<ul style="list-style-type: none"> • 2 existing improved road w/ existing utility corridor segments • 1 existing primitive road segment • 1 proposed staging area • 1 existing overhead powerline segment • 1 proposed overhead powerline segment • 3 existing access road and corridor segments • 5 permitted federal gas wells (Carr Draw 3 East)
4585	<ul style="list-style-type: none"> • 4 wells (21-27, 12-26, 43-27, 33-27) • 4 existing primitive road segments – 1 segment w/ a portion of spot upgrade proposed and 1 segment with a template road proposed • 1 existing primitive road w/ proposed utility corridor segment • 1 existing improved road w/ proposed utility corridor segment • 1 existing oil pipeline • 1 existing oil well
3726	<ul style="list-style-type: none"> • 3 existing primitive road segments • 1 existing oil pipeline • 1 proposed overhead powerline segment
3732	<ul style="list-style-type: none"> • Intersects POD boundary, but no infrastructure is proposed within 0.5 mile
6345	<ul style="list-style-type: none"> • Intersects POD boundary, but no infrastructure is proposed within 0.5 mile
<p>Notes:</p> <p>1 Rows shown in gray indicate nests that fall within 0.5 miles of the POD boundary but that do not have infrastructure proposed within 0.5 miles (or within 0.25 miles, in the case of burrowing owl nests).</p>	

Use of nest 4125 will likely continue to occur, because traffic associated with the Carr Draw III West project will not increase to levels greater than existing levels on the main access road to the oil development already in the area. The red-tailed hawks that occupied nest 4125 in 2008 are likely accustomed to the disturbance associated with this main travel road.

All remaining nests are or have been occupied by red-tailed hawks or great horned owls, both species being less sensitive to human disturbance, and infrastructure was either not proposed within or removed from a distance considered potentially disturbing to these species.

Additional direct and indirect impacts to raptors, from oil and gas development, are analyzed in the PRB FEIS (pp. 4-216 to 4-221).

4.1.5.4.1. Raptors Cumulative Effects

The cumulative effects associated with Alternatives C and D are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, refer to the PRB FEIS, pg. 4-221. No additional mitigation measures are required.

4.1.5.5. Plains Sharp-tailed Grouse Effects

Sharp-tailed grouse are not expected to be impacted by the proposed project because the project area has limited potential to support them.

4.1.5.6. Sagebrush Obligates Direct and Indirect Effects

Construction and maintenance activities associated with development of the Carr Draw III West project are likely to cause a decline in sagebrush obligate species. In Wyoming, existing oil and gas wells are located primarily in landscapes dominated by sagebrush, causing direct loss of this habitat. Associated road networks, pipelines, and powerline transmission corridors also influence vegetation dynamics by fragmenting habitats or by creating soil conditions facilitating the spread of invasive species (Braun 1998, Gelbard and Belnap 2003). Density of sagebrush-obligate birds within 328 feet (100m) of roads constructed for natural gas development in Wyoming was 50% lower than at greater distances (Ingelfinger 2001).

4.1.5.6.1. Sagebrush Obligates Cumulative Effects

Fragmentation of shrubsteppe habitat is a major disruption that has consequences for sagebrush-obligate species (Braun et al. 1976; Rotenberry & Wiens 1980a). In fragmented habitats, suitable habitat area remains only as remnants surrounded by unusable environments (Urban and Shugart 1984; Fahrig & Paloheimo 1988). Sagebrush-obligate species decline because areas of suitable habitat decrease (Temple & Cary 1988), because of lower reproduction, and/or because of higher mortality in remaining habitats (Robinson 1992; Porneluzi et al. 1993). Fragmentation of shrubsteppe has the further potential to affect the conservation of sagebrush-obligate species because of the permanence of disturbance (Knick and Rotenberry 1995). Several decades are required to reestablish ecologically functioning mature sagebrush communities. Due to this, sagebrush obligate species may not return for many years after reclamation activities are completed.

4.1.5.7. Threatened and Endangered Species

Potential project effects on Threatened and Endangered Species were analyzed and a summary is provided in Table 4.2.

Table 4.2 Summary of Threatened and Endangered Species Habitat and Project Effects.

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
<i>Endangered</i>				
Black-footed ferret (<i>Mustela nigripes</i>)	Black-tailed prairie dog colonies or complexes > 1,000 acres.	NS	NE	Suitable habitat will not be directly impacted.
<i>Threatened</i>				
Blowout penstemon (<i>Penstemon haydenii</i>)	Unstable, sandy blow-outs and active sand dunes	NP	NE	Depositional sands/dunes not present.
Ute ladies'-tresses orchid (<i>Spiranthes diluvialis</i>)	Riparian areas with permanent water	NP	NE	No suitable habitat present.

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
Presence				
K - Known, documented observation within project area.				
S - Habitat suitable and species suspected, to occur within the project area.				
NS - Habitat suitable but species is not suspected to occur within the project area.				
NP - Habitat not present and species unlikely to occur within the project area.				
Project Effects				
LAA - Likely to adversely affect				
NE - No Effect				
NLAA - May Affect, not likely to adversely affect individuals or habitat.				

4.1.5.7.1. Blowout Penstemon Direct and Indirect Effects

Based on habitat assessments of the project area (WLS 2009b), there is no suitable Blowout penstemon habitat that could be disturbed within the proposed action area. Therefore the project will have “no effect” on Blowout penstemon.

4.1.5.7.2. Black-Footed Ferret Direct and Indirect Effects

Direct and indirect effects to black-footed ferret are discussed in the PRB FEIS (pg. 4-251). Suitable habitat is of sufficient size to support a black-footed ferret population. The project area is 13 miles from the Pleasantdale reintroduction area. No surveys for ferrets were required or conducted. It is extremely unlikely that any black-footed ferret is present in the project area. However, if any black-footed ferret became present, the proposed action would not impact ferret habitat. Implementation of the proposed development will have “no effect” on the black-footed ferret because suitable habitat is not present and the species is not likely to occur.

4.1.5.7.3. Ute Ladies’-Tresses Orchid Direct and Indirect Effects

Suitable habitat is not present within the proposed Carr Draw III West project area. Implementation of the proposed coal bed natural gas project will have “no effect” on the Ute ladies’- tresses orchid.

4.1.5.7.4. Threatened and Endangered Species Cumulative Effects

The cumulative effects associated with Alternative C and D are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, refer to the PRB FEIS, pp. 4-250 to 4-257. No additional mitigation measures are required.

4.1.5.8. Sensitive Species

BLM will take necessary actions to meet the policies set forth in sensitive species policy (BLM Manual 6840). BLM Manual 6840.22A states that “The BLM should obtain and use the best available information deemed necessary to evaluate the status of special status species in areas affected by land use plans or other proposed actions and to develop sound conservation practices. Implementation-level planning should consider all site-specific methods and procedures which are needed to bring the species and their habitats to the condition under which the provisions of the ESA are not necessary, current listings under special status species categories are no longer necessary, and future listings under special status species categories would not be necessary.”

The PRB FEIS discusses impacts to sensitive species on pp. 4-257 to 4-273. Table 4.3 summarizes the habitat requirements and potential impacts of the Carr Draw III West project on all Wyoming BLM sensitive species that occur in the BFO administrative area. Some sensitive species are of particular concern in the project area, due to their demonstrated or suspected sensitivity to CBNG development or because they were recently considered for listing under the ESA. These species include bald eagle, black-tailed prairie dog, and greater sage-grouse, and are discussed in further detail in this section.

Table 4.3 Summary of Sensitive Species Habitat and Project Effects.

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
Amphibians				
Northern leopard frog (<i>Rana pipiens</i>)	Beaver ponds and cattail marshes from plains to montane zones.	NP	NI	Suitable habitat not present
Columbia spotted frog (<i>Rana pretiosa</i>)	Ponds, sloughs, small streams, and cattails in foothills and montane zones. Confined to headwaters of the S Tongue R drainage and tributaries.	NP	NI	The project area is outside the species' range, and the species is not expected to occur .
Fish				
Sturgeon chub (<i>Macrhybopsis gelida</i>)	Swift, rocky riffles throughout the Powder River.	S	NI	Amount of water discharged to the Powder River not of sufficient magnitude to have impacts to this species. Changes in water quality not expected to have an impact.
Yellowstone cutthroat trout (<i>Oncorhynchus clarki bouvieri</i>)	Cold-water rivers, creeks, beaver ponds, and large lakes in the Upper Tongue sub-watershed	NP	NI	The project area is outside the species' range, and the species is not expected to occur .
Birds				
Baird's sparrow (<i>Ammodramus bairdii</i>)	Shortgrass prairie and basin-prairie shrubland habitats; plowed and stubble fields; grazed pastures; dry lakebeds; and other sparse, bare, dry ground.	S	MIIH	Shortgrass prairie and sagebrush cover will be affected.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Mature forest cover often within one mile of large water body with reliable prey source nearby.	S	MIIH	Infrastructure within one mile of occupied mature cottonwood stand.
Brewer's sparrow (<i>Spizella breweri</i>)	Sagebrush shrubland	S	MIIH	Sagebrush cover will be affected.
Ferruginous hawk (<i>Buteo regalis</i>)	Basin-prairie shrub, grasslands, rock outcrops	S	MIIH	Foraging habitat will be impacted and human activities will increase.
Greater sage-grouse (<i>Centrocercus urophasianus</i>)	Basin-prairie shrub, mountain-foothill shrub	K	WIPV	Sagebrush cover will be affected.
Loggerhead shrike (<i>Lanius ludovicianus</i>)	Basin-prairie shrub, mountain-foothill shrub	S	MIIH	Sagebrush cover will be affected.

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
Long-billed curlew (<i>Numenius americanus</i>)	Grasslands, plains, foothills, wet meadows	S	MIIH	Grasslands, meadows will be impacted.
Mountain plover (<i>Charadrius montanus</i>)	Short-grass prairie with slopes < 5%	NP	NI	Suitable habitat not present.
Northern goshawk (<i>Accipiter gentilis</i>)	Conifer and deciduous forests	S	MIIH	Forest habitat will be impacted.
Peregrine falcon (<i>Falco peregrinus</i>)	Cliffs	NP	NI	No nesting habitat present.
Sage sparrow (<i>Amphispiza billneata</i>)	Basin-prairie shrub, mountain-foothill shrub	S	MIIH	Sagebrush cover will be affected.
Sage thrasher (<i>Oreoscoptes montanus</i>)	Basin-prairie shrub, mountain-foothill shrub	S	MIIH	Sagebrush cover will be affected.
Trumpeter swan (<i>Cygnus buccinator</i>)	Lakes, ponds, rivers	NP	NI	Habitat not present.
Western Burrowing owl (<i>Athene cunicularia</i>)	Grasslands, basin-prairie shrub	NP	NI	Habitat not present.
White-faced ibis (<i>Plegadis chihi</i>)	Marshes, wet meadows	NP	NI	Permanently wet meadows not present.
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	Open woodlands, streamside willow and alder groves	NP	NI	Streamside habitats not present.
Mammals				
Black-tailed prairie dog (<i>Cynomys ludovicianus</i>)	Prairie habitats with deep, firm soils and slopes less than 10 degrees.	K	MIIH	Infrastructure within 0.25 miles of a prairie dog town. Town may be impacted.
Fringed myotis (<i>Myotis thysanodes</i>)	Conifer forests, woodland chaparral, caves and mines	S	MIIH	Conifer forest will be impacted.
Long-eared myotis (<i>Myotis evotis</i>)	Conifer and deciduous forest, caves and mines	S	MIIH	Conifer forest will be impacted.
Spotted bat (<i>Euderma maculatum</i>)	Cliffs over perennial water.	NP	NI	Cliffs & perennial water not present.
Swift fox (<i>Vulpes velox</i>)	Grasslands	NP	NI	Habitat not present.
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	Caves and mines.	NP	NI	Habitat not present.
Plants				

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
Porter's sagebrush (<i>Artemisia porteri</i>)	Sparsely vegetated badlands of ashy or tufaceous mudstone and clay slopes 5300-6500 ft.	NP	NI	Habitat not present.
William's wafer parsnip (<i>Cymopterus williamsii</i>)	Open ridgetops and upper slopes with exposed limestone outcrops or rockslides, 6000-8300 ft.	NP	NI	Project area outside of species' range.
<p>Presence K - Known, documented observation within project area. S - Habitat suitable and species suspected, to occur within the project area. NS - Habitat suitable but species is not suspected to occur within the project area. NP - Habitat not present and species unlikely to occur within the project area.</p> <p>Project Effects NI - No Impact. MIH - May Impact Individuals or Habitat, but will not likely contribute to a trend towards Federal listing or a loss of viability to the population or species. WIPV - Will Impact Individuals or Habitat with a consequence that the action may contribute to a trend towards Federal listing or cause a loss of viability to the population or species. BI - Beneficial Impact</p>				

4.1.5.8.1. Bald Eagle Direct and Indirect Effects

Though roosting habitat does exist within and surrounding the project area, no bald eagle winter roosts or bald eagle nests are present. The project is not likely to impact bald eagle roosting or nesting.

Impacts to bald eagles are discussed in the PRB FEIS on pg. 4-251 to 4-253. A more recent study completed in 2004 suggests that two-tracks and improved project roads pose minimal collision risk to bald eagles. In one year of monitoring road-side carcasses the BLM BFO reported 439 carcasses, 226 along Interstates (51%), 193 along paved highways (44%), 19 along gravel county roads (4%), and 1 along an improved CBNG road (<1%) (Bills 2004). No road-killed eagles were reported; bald and golden eagles were observed feeding on 16 of the reported road-side carcasses (<4%). The risk of big-game vehicle-related mortality along CBNG project roads is so insignificant or discountable that when combined with the lack of bald eagle mortalities associated with highway foraging leads to the conclusion that CBNG project roads do not affect bald eagles.

4.1.5.8.2. Black-tailed Prairie Dog Direct and Indirect Effects

None of the proposed infrastructure will directly affect prairie dog colonies. A water pipeline is proposed north of, adjacent to, the prairie dog colony in S21. During construction of the pipeline, dispersal of prairie dogs may be affected. As prairie dog colonies grow in size, prairie dogs may disperse to new colonies, preferring to move into an existing colony or one that has been abandoned, rather than start a completely new colony (Hoogland 1995). Construction may cause increased stress on prairie dogs as they attempt to disperse and may result in avoidance of colonies in close proximity to such activities. Additional impacts to black-tailed prairie dogs are discussed in the PRB FEIS on pg. 4-255 to 4-256.

4.1.5.8.3. Greater Sage-grouse Direct and Indirect Effects

The Powder River Basin Oil and Gas Project FEIS (BLM 2003) concluded that “Activities associated with the proposed project would affect sage-grouse in several ways. These effects may include: (1) increased direct mortality (including legal hunting, poaching, and collision with power lines and vehicles); (2) the introduction of new perches for raptors and thus the potential change in rate of predation; (3) direct loss or degradation of habitats; (4) indirect disturbance resulting from human activity (including harassment, displacement, and noise); (5) habitat fragmentation (particularly through construction of roads); and (6) changes in population (pg. 4-257).”

The proposed action will likely impact sage-grouse in all of the ways listed above, with the exception of direct loss of habitats. To mitigate impacts to sage-grouse, Williams Production RMT Company avoided potential sage-grouse habitat when planning the project. They proposed wells and infrastructure outside of sagebrush stands and in disturbed areas. Most of the proposed infrastructure is either located in areas dominated by grass, along existing infrastructure, or in areas of marginal habitat due to topography. Mitigation measures that Williams Production RMT Company committed to in the surface use plan in order to minimize impacts to elk throughout the project area may also mitigate impacts to sage-grouse. In addition, Williams Production RMT Company will be required to install perch-inhibiting devices on all overhead powerline poles. Though this will not reduce the effects associated with long-term avoidance of the powerlines, it will reduce direct mortality from predation by raptors.

The infrastructure proposed in Sections 21, 22, 23, and 27, T50N R76W will impact sagebrush stands. The wells proposed in these sections will create no greater impact to sage-grouse than the impacts already incurred by the existing oil wells and associated traffic. This existing development reduces the likelihood that sage-grouse would select these stands for nesting.

Impacts from the project to the local sage-grouse population may occur through a reduction of overall habitat quality, increased predation risk, and increased direct mortalities and will likely be manifested through declines in lek attendance as sage-grouse avoid these developed areas and seek out less disturbed

leks. The additional infrastructure may impact sage-grouse through the addition of potential raptor perches, shelters and burrows for mammalian predators, and travel routes for predators, thereby increasing chances of sage-grouse mortalities cause by predation. Overhead powerlines and increased traffic will increase collision hazards for sage-grouse moving across the landscape. In addition, noise and human activities will further reduce habitat quality.

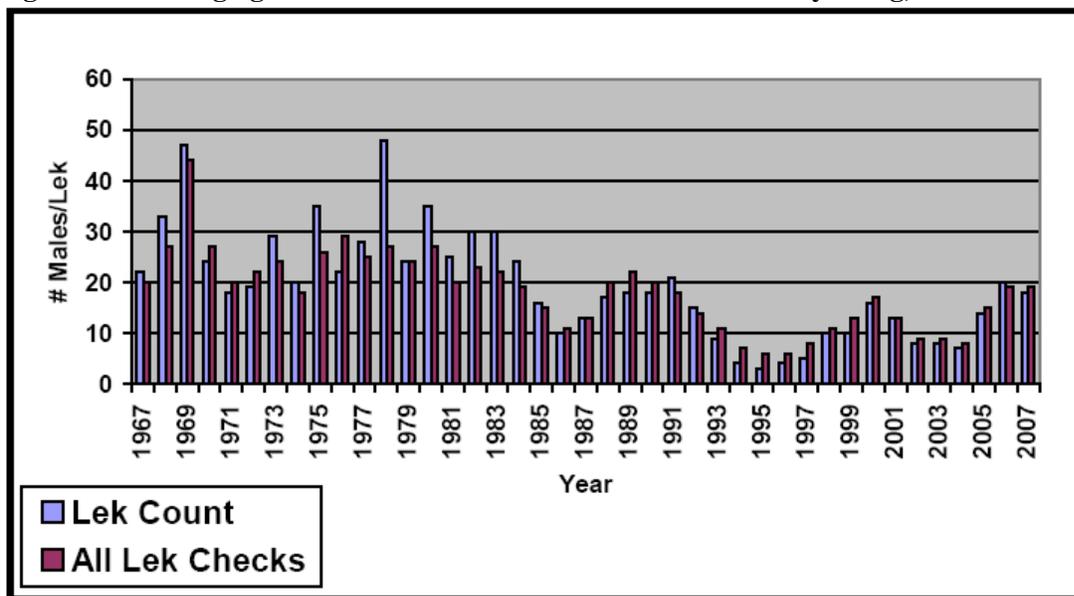
Direct and indirect impacts to sage-grouse are discussed in more detail in the PRB FEIS on pg. 4-257 to 4-273.

4.1.5.8.3.1. Greater Sage-grouse Cumulative Effects

Recent research suggests that the cumulative and synergistic effects of current and foreseeable CBNG development within the vicinity of the project area are likely to impact the local sage-grouse population, cause declines in lek attendance, and may result in local extirpation. The cumulative impact assessment area for this project encompasses a four mile radius from four sage-grouse leks that occur within four miles of the project boundary. Analysis of impacts up to four miles was recommended by the State Wildlife Agencies' Ad Hoc Committee for Consideration of Oil and Gas Development Effects to Nesting Habitat (2008).

The sage-grouse population within northeast Wyoming has been exhibiting a steady long term downward trend, as measured by lek attendance (Figure 3) (WGFD 2005). The figure illustrates a ten-year cycle of periodic highs and lows. Each subsequent population peak is lower than the previous peak. Long-term harvest trends are similar to that of lek attendance (WGFD 2005). The research described below suggests that these declines may be a result, in part, of CBNG development in this region of Wyoming and that the leks within the cumulative impact assessment area may experience similar declines.

Figure 3 Male sage-grouse lek attendance within northeastern Wyoming, 1967-2007.



Research has shown that declines in lek attendance are correlated with oil and gas development. Several studies have shown that well density can be used as a metric for evaluating impacts to sage-grouse, as measured by declines in lek attendance (Braun et al. 2002, Holloran et al. 2005, and Walker et al. 2007).

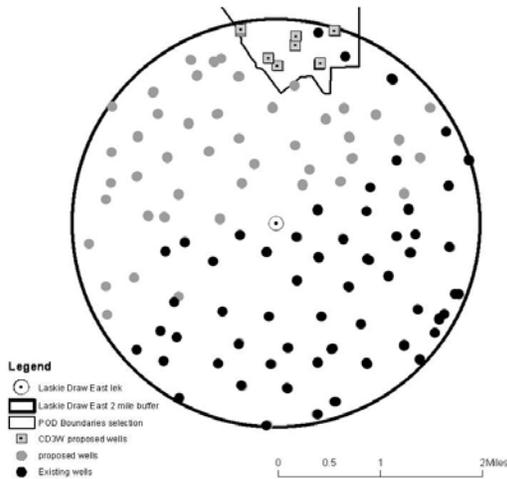
These studies indicated that oil or gas development exceeding approximately one well pad per square mile, resulted in calculable impacts on breeding populations, as measured by the number of male sage-grouse attending leks (State Wildlife Agencies' Ad Hoc Committee for Sage-Grouse and Oil and Gas Development 2008).

There are currently 801 wells (Wyoming Oil and Gas Conservation Commission [WOGCC] 07/2009) within the cumulative impact assessment area, an area of 160 square miles, which amounts to a density of approximately 5.0 wells per square mile. Currently, there are approximately 290 proposed wells (Automated Fluid Minerals Support System [AFMSS] 07/2009) (including the 11 from this project) within four miles of the five leks. With the addition of the 279 proposed wells that are not associated with this proposed action, the well density within four miles of the leks increases to 6.8 wells/section. With approval of alternative C (11 proposed well locations) the well density remains the same at 6.8 wells/section, well above the one well per square mile recommendation by the State Wildlife Agencies' Ad Hoc Committee for Sage-Grouse and Oil and Gas Development.

In its *Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats* (2009), WGFD categorized levels of oil and gas development into thresholds that correspond to moderate, high, and extreme impacts to habitat effectiveness for various species of wildlife, based on well pad densities and acreages of disturbance. All three levels of impact result in a loss of habitat function by directly eliminating habitat; disrupting wildlife access to, or use of habitat; or causing avoidance and stress to wildlife. Impacts to sage-grouse are categorized by number of well pad locations per square mile within two miles of a lek and within identified nesting/brood-rearing habitats greater than two miles from a lek. Moderate impacts occur when well density is between one and two well pad locations per square mile or where there is less than 20 acres of disturbance per square mile. High impacts occur when well density is between two and three well pad locations per square mile or when there are between 20 and 60 acres of disturbance per square mile. Extreme impacts occur when well density exceeds three well pad locations per square mile or when there are greater than 60 acres of disturbance per square mile. Extreme impacts mean those where the function of an important wildlife habitat is substantially impaired or lost.

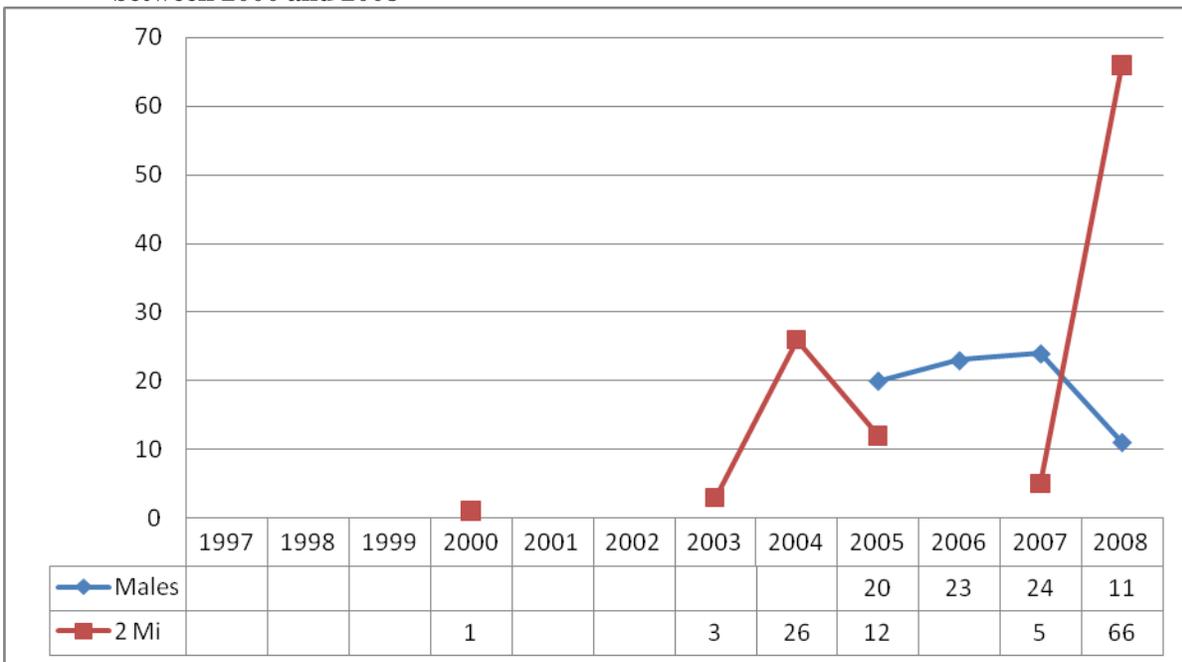
The Laskie Draw East lek is the only sage-grouse lek within two miles of the project boundary. There are currently 81 wells within two miles of this lek, an area of 12.6 square miles, for a total well density of 6.4 wells per square mile, indicating that impacts to this lek as a result of existing oil and gas development are considered by WGFD to be classified as "extreme impacts". One hundred and thirteen additional wells are proposed within two miles of the Laskie Draw East lek. Eight are from this project. If only the eight Carr Draw III West wells were to be drilled, well density would increase to 7 wells per square mile within two miles of the Laskie Draw East lek. With the addition of the 105 wells not associated with the Carr Draw III West project, well density within two miles of this lek would increase to 15.4 wells per square mile, well above the WGFD threshold of 3 wells per square mile for extreme impacts (Figure 2).

Figure 4 Existing and proposed wells within 2 miles of the Laskie Draw East lek



According to lek counts maintained by WGFD, the number of males attending the Laskie Draw East lek increased between 2005 and 2007 (Figure .4). The WOGCC data shows that the number of wells drilled within two miles of the lek increased between 2003 and 2004, decreased from 2004 to 2005, then drastically increased between 2007 and 2008. The peak number of males observed at the lek declined from 24 in 2007 to 11 in 2008. This is consistent with patterns described in Walker et al. (2007) where lek attendance initially increased as development encroached, to account for displaced birds, but then declined rapidly as development continued to move through an area.

Figure 5 Peak male attendance at the Laskie Draw East lek and number of wells drilled each year between 2000 and 2008



Declines in lek attendance associated with oil and gas development may be a result of a suite of factors including avoidance (Holloran et al. 2005, Holloran et al. 2007, Aldridge and Boyce 2007, Walker et al.

2007, Doherty et al. 2008, WGFD 2009), loss and fragmentation of habitat (Connelly et al. 2000, Braun et al. 2002, Connelly et al. 2004, WGFD 2004a, Rowland et al. 2005, WGFD 2005, Naugle et al. in press), reductions in habitat quality (Braun et al. 2002, WGFD 2003, Connelly et al. 2004, Holloran et al. 2005) and changes in disease mechanisms (Naugle et al. 2004, WGFD 2004b, Walker et al. 2007, Cornish pers. comm.).

The BFO Resource Management Plan (BLM 2001) and the PRB FEIS Record of Decision (BLM 2003) included a two-mile timing limitation on surface-disturbing activities around sage-grouse leks. The two-mile measure originated with the Western Association of Fish and Wildlife Agencies (WAFWA) (BLM 2004). Wyoming BLM adopted the two-mile recommendation in 1990 (BLM 1990).

The two-mile recommendation was based on early research which indicated between 59% and 87% of sage-grouse nests were located within two miles of a lek (BLM 2004). These studies were conducted within vast contiguous stands of sagebrush, such as those that occur in Idaho's Snake River plain. Additional research across more of the sage-grouse's range have since indicated that nesting may occur much farther than two miles from the breeding lek (BLM 2004). Holloran and Anderson (2005), in their Upper Green River Basin study area, reported that only 45% of their sage-grouse hens nested within 1.9 miles of the capture lek. Moynahan and Lindberg (2004) found that only 36% of their sage-grouse hens nested within 1.9 miles of the capture lek. Habitat conditions, and, thus, sage-grouse biology, within the BFO are more similar to Moynahan's north-central Montana study area than the Upper Green River area. Moynahan's study area occurred in mixed-grass prairie and sagebrush steppe, dominated by Wyoming big sagebrush (Moynahan et al. 2007). In a typical landscape in the Powder River Basin, energy development within two miles of leks is projected to reduce the average probability of lek persistence from 87% to 5% percent (Walker et al. 2007). Recent research in the Powder River Basin suggests that impacts to leks from energy development are discernable out to a minimum of four miles, and that some leks within this radius have been extirpated as a direct result of energy development (Walker et al. 2007, Walker 2008, Naugle et al. *In press*). Based on these studies, the BLM has determined that a two-mile timing limitation is insufficient to reverse the population decline.

Even with a timing limitation on construction activities, sage-grouse may avoid nesting within CBNG fields because of the activities associated with operation and production. A timing limitation does not minimize habitat loss and fragmentation or change disease mechanisms. Rather than limiting mitigation to only timing restrictions, more effective mitigation strategies may include, at a minimum, burying power lines (Connelly et al. 2000b); minimizing road and well pad construction, vehicle traffic, and industrial noise (Lyon and Anderson 2003, Holloran 2005); and managing produced water to prevent the spread of mosquitoes with the potential to vector West Nile Virus in sage grouse habitat (Walker et al 2007). Walker et al. (2007) recommend maintaining extensive stands of sagebrush habitat over large areas (at least one mile in size) around leks to aid sage-grouse persistence. The size of such a no-development buffer would depend on the amount of suitable habitat around the lek and the population impact deemed acceptable. Connelly et al. (2000) recommended locating all energy-related facilities at least two miles from active leks. Other researchers have recommended avoiding areas within four miles of a lek and within areas of mapped nesting and brood-rearing habitat outside the four-mile perimeter (Walker et al. 2007, Walker 2008, Naugle et al. *In press*).

Several guidance documents are available that recommend practices that would reduce impacts of development on greater sage-grouse. These include *Northeast Wyoming Sage-Grouse Conservation Plan* (Northeast Wyoming Sage-grouse Working Group 2006), *Sage-Grouse Habitat Management Guidelines for Wyoming* (Bohne et al. 2007), *Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats* (WGFD 2009), *Bureau of Land Management National Sage-Grouse Habitat Conservation Strategy* (USDI 2004), and *Greater Sage-Grouse Comprehensive Conservation Strategy* (Stiver et al. 2006).

The Powder River Basin Oil and Gas Project FEIS (BLM 2003) states that “the synergistic effect of several impacts would likely result in a downward trend for the sage-grouse population, and may contribute to the array of cumulative effects that may lead to its federal listing. Local populations may be extirpated in areas of concentrated development, but viability across the Project Area (Powder River Basin) or the entire range of the species is not likely to be compromised (pg. 4-270).” Based on the impacts described in the Powder River Basin Oil and Gas Project FEIS and the findings of more recent research, the proposed action may contribute to a decline in male attendance at the five leks that occur within four miles of the project area, and, potentially, extirpation of the local grouse population.

4.1.5.8.4. Mountain Plover Direct and Indirect Effects

Suitable mountain plover habitat is not present within 0.25 miles of the project area. The project is not likely to impact mountain plovers. An analysis of direct and indirect impacts to mountain plover due to oil and gas development is included in the PRB FEIS (pp. 4-254 to 4-255).

4.1.5.8.5. Sensitive Species Cumulative Effects

The cumulative effects associated with Alternative C are within the analysis parameters and impacts described in the PRB FEIS (pp. 4-257 to 4-273).

4.2. West Nile Virus Direct and Indirect Effects

This project is likely to result in standing surface water which may potentially increase mosquito breeding habitat. BLM has consulted with applicable state agencies, County Weed and Pest and the State Health Department, per above mitigation in the PRB ROD page 18, regarding the disease and the need to treat. BLM has also consulted with the researchers that are studying the dynamics of WNV species and its effects in Wyoming.

There is no evidence that treatment, either through the use of larvicides or malithion, on a site specific or basin-wide scale will have any effect on the overall spread of the disease. The State agencies have not instituted state-wide treatment for mosquitoes due to WNV, nor are they requiring any mitigation specific to permitting for CBM operations.

Cumulatively, there are many sources of standing water, beyond CBM discharge, throughout the PRB that would add to the potential for mosquito habitat. Sources include; natural flows, livestock watering facilities, coal mining operations, and outdoor water use and features in and around communities.

BLM will keep monitoring this issue by continuing to consult with the State agencies and the researchers working in the area in order to stay abreast of the most current developments and any need to apply mitigation.

4.3. Water Resources

The operator has submitted a comprehensive WMP for this project. It is incorporated-by-reference into this EA pursuant to 40 CFR 1502.21. The WMP incorporates sound water management practices, monitoring of downstream impacts within the Upper Powder River watershed and commitment to comply with Wyoming State water laws/regulations. It also addresses potential impacts to the environment and landowner concerns. Qualified hydrologists, in consultation with the BLM, developed the water management plan. Adherence with the plan, in addition to BLM applied mitigation (in the form of COAs), would reduce project area and downstream impacts from proposed water management strategies.

All effluent produced from the proposed 104 wells within the Carr Draw III West project will be transported by common waterline systems to off-project facilities located to the south, southeast, and west of the Carr Draw II west project. The existing off-project infrastructure that will be utilized to manage

Carr Draw III West effluents is associated with Schoonover Road Unit 1, 2, 3, & 5 PODs, South Prong Unit 1, 2, & 3 PODs and the Black Bullet, Somerville Waterline Sundries 1 & 2. These existing plans vary from discharge to impoundments to Emits treatment and discharge. Information pertaining to the specific water management infrastructure for these projects can be reviewed in the respective POD water management plans.

The WDEQ has assumed primacy from United States Environmental Protection Agency for maintaining the water quality in the waters of the state. The WSEO has authority for regulating water rights issues and permitting impoundments for the containment of surface waters of the state.

The maximum water production is predicted to be 20 gpm per well or 2,080 gpm (4.6 cfs or 3,355 acre-feet per year) for this POD. The PRB FEIS projected the total amount of water that was anticipated to be produced from CBNG development per year (Table 2-8 Projected Amount of Water Produced from CBM Wells under Alternatives 1, 2A and 2B pg 2-26). For the Upper Powder River drainage, the projected volume produced within the watershed area was 147,481 acre-feet in 2008 (maximum production is estimated in 2006 at 171,423 acre-feet). As such, the volume of water resulting from the production of these wells is 2.3% of the total volume projected for 2008. This volume of produced water is also within the predicted parameters of the PRB FEIS.

4.3.1. Groundwater/Surface Water

The PRB FEIS predicts an infiltration rate of 40% to groundwater aquifers and coal zones in the drainage area (PRB FEIS pg 4-5). For this action, it may be assumed that a maximum of 832 gpm will infiltrate at or near the discharge points and impoundments (1,342 acre feet per year). This water will saturate the near surface alluvium and deeper formations prior to mixing with the groundwater used for stock and domestic purposes. According to the PRB FEIS, “the increased volume of water recharging the underlying aquifers of the Wasatch and Fort Union Formations would be chemically similar to alluvial groundwater.” (PRB FEIS pg 4-54). Therefore, the chemical nature and the volume of the discharged water may not degrade the groundwater quality.

The PRB FEIS predicts that one of the environmental consequences of coal bed natural gas production is possible impacts to the groundwater. “The effects of development of CBM on groundwater resources would be seen as a drop in the water level (drawdown) in nearby wells completed in the developed coal aquifers and underlying or overlying sand aquifers.” (PRB FEIS page 4-1). In the process of dewatering the coal zone to increase natural gas recovery rates, this project may have some effect on the static water level of wells in the area. The permitted water wells produce from depths which range from to 25-1,200 feet compared to 1,131 feet (Big George) and to 2,376 (Wall) coal. As mitigation, the operator has committed to offer water well agreements to holders of properly permitted domestic and stock wells within the circle of influence (½ mile of a federal CBNG producing well) of the proposed wells.

Recovery of the coal bed aquifer was predicted in the PRB FEIS to “...re-saturate and re-pressurize the areas that were partially depressurized during operations. The amount of groundwater storage within the coals and sands units above and below the coals is enormous. Almost 750 million acre-feet of recoverable groundwater are stored within the Wasatch - Tongue River sand and coals (PRB FEIS Table 3-5). Redistribution is projected to result in a rapid initial recovery of water levels in the coal. The model projects that this initial recovery period would occur over 25 years.” (PRB FEIS page 4-38).

Adherence to the drilling plan, the setting of casing at appropriate depths, following safe remedial procedures in the event of casing failure, and utilizing proper cementing procedures will protect any potential fresh water aquifers above the target coal zone. This will ensure that ground water will not be adversely impacted by well drilling and completion operations.

In order to determine the actual water quality of the producing formations in this POD, and to verify the water analysis submitted for the pre-approval evaluation, the operator has committed to designate a reference well within the POD. The reference well will be sampled at the well head for analysis within sixty days of initial production and a copy of the water analysis will be submitted to the BLM Authorizing Officer.

Shallow ground water monitoring is ongoing at impoundment sites across the basin. Due to the limited data available from these sites, the still uncertain overall fate or extent of change that is occurring due to infiltration at those sites, and the extensive variable site characteristics both surface and subsurface, it is not reliable at this time to infer that findings from these monitoring wells should be directly applied to other impoundment locations across the basin.

In order to address the potential impacts from infiltration on shallow ground water, the Wyoming DEQ has developed a guidance document, “Compliance Monitoring for Ground Water Protection Beneath Unlined Coalbed Methane Produced Water Impoundments” (June 14, 2004) which can be accessed on their website. This guidance document became effective August 1, 2004. As of April of 2009, approximately 1,999 impoundment sites had been investigated through over 2,272 borings. Of these impoundments, 277 met the criteria to require “compliance monitoring” if constructed and used for CBNG water containment. Only 155 impoundments requiring monitoring are presently being used. As of the first quarter of 2009, only 18 of those monitored impoundments caused a change in the “Class of Use” of the underlying aquifer water.

4.3.1.1. Groundwater Cumulative Effects

As stated in the PRB FEIS, “The aerial extent and magnitude of drawdown effects on coal zone aquifers and overlying and underlying sand units in the Wasatch Formation also would be limited by the discontinuous nature of the different coal zones within the Fort Union Formation and sandstone layers within the Wasatch Formation.” (PRB FEIS page 4-64).

Development of CBNG through 2018 (and coal mining through 2033) would remove 4 million acre-feet of groundwater from the coal zone aquifer (PRB FEIS page 4-65). This volume of water “...cumulatively represents 0.5 percent of the recoverable groundwater stored in the Wasatch – Tongue River sands and coals (nearly 750 million acre-feet, from Table 3-5). All of the groundwater projected to be removed during reasonably foreseeable CBNG development and coal mining would represent less than 0.3 percent of the total recoverable groundwater in the Wasatch and Fort Union Formations within the PRB (nearly 1.4 billion acre-feet, from Table 3-5).” (PRB FEIS page 4-65). No additional mitigation is necessary.

4.3.2. Surface Water

The following table shows Wyoming proposed numeric limits for the watershed for SAR, and EC, the average value measured at selected USGS gauging stations at high and low monthly flows, and Wyoming groundwater quality standards for TDS and SAR for Class I to Class III water. It also shows pollutant limits for TDS, SAR and EC detailed in the WDEQ’s WYPDES permits which will be used for this POD, and the levels found in the POD’s representative water sample.

Table 4.4 Comparison of Regulated Water Quality Parameters to Predicted Water Quality

Predicted Values	TDS, mg/l	SAR	EC, µmhos/cm
Most Restrictive Proposed Limit –		2	1000
Least Restrictive Proposed Limit		10	3200
Primary Watershed at Arvada, WY Gauging station Historic Data Average at Maximum Flow Historic Data Average at Minimum Flow		4.76	1,797

Predicted Values	TDS, mg/l	SAR	EC, µmhos/cm
		7.83	3,400
WDEQ Quality Standards for Wyoming Groundwater (Chapter 8)			
Drinking Water (Class I)	500		
Agricultural Use (Class II)	2,000	8	
Livestock Use (Class III)	5,000		
WDEQ Water Quality Requirement for WYPDES Permit # WY0038733			
At discharge point	NA	NA	7500
WYPDES Permit # WY0048321			
At discharge point	5000	NA	7500
At Irrigation Compliance point	NA	6	2000
WYPDES Permit # WY0046922			
At discharge point	5000	NA	7500
WYPDES Permit # WY0050709			
At discharge point	5000	NA	7500
At Irrigation Compliance point	NA	6	2000
WYPDES Permit # WY0051462			
At discharge point	5000	NA	7500
At Irrigation Compliance point	NA	6	2000
WYPDES Permit #WY0050857			
At Discharge Point	5000	NA	7500
Predicted Produced Water Quality			
Big George Coal	1150	18.8	2650
Gates/Wall	1270	16.3	2010

Based on the analysis performed in the PRB FEIS, the primary beneficial use of the surface water in the Powder River Basin is the irrigation of crops (PRB FEIS pg 4-69). The water quality projected for this POD is 1150 - 1270 mg/l TDS which is within the WDEQ criteria for agricultural use (2000 mg/l TDS). However direct land application is not included in this proposal. If at any future time the operator entertains the possibility of irrigation or land application with the water produced from these wells, the proposal must be submitted as a sundry notice for separate environmental analysis and approval by the BLM.

The quality for the water produced from the target coal zone from these wells is predicted to be similar to the sample water quality collected from a location near the POD. A maximum of 20 gallons per minute (gpm) is projected is to be produced from these 104 wells, for a total of 2,080 gpm for the POD. See Table 4.5.

A portion of the produced water in the Carr Draw III West POD will be transferred into existing pipelines to two different Emit treatment facilities located on the Powder River and Barber Creek. This strategy will result in less water infiltration below impoundments. Therefore, the water calculations outlined below will be less than anticipated.

The PRB FEIS assumes that 15% of the impounded water will re-surface as channel flow (PRB FEIS pg 4-74). Consequently, the volume of water produced from these wells may result in the addition of 0.69 cfs below the lowest reservoir (after infiltration and evapotranspiration losses). The operator has committed to monitor the condition of channels and address any problems resulting from discharge. Discharge from the impoundments will potentially allow for streambed enhancement through wetland-riparian species

establishment. Sedimentation will occur in the impoundments, but would be controlled through a concerted monitoring and maintenance program. Phased reclamation plans for the impoundments will be submitted and approved on a site-specific, case-by-case basis as they are no longer needed for disposal of CBNG water, as required by BLM applied COAs.

Alternative (2A), the approved alternative in the Record of Decision for the PRB FEIS, states that the peak production of water discharged to the surface will occur in 2006 at a total contribution to the mainstem of the Upper Powder River of 68 cfs (PRB FEIS pg 4-86). The predicted maximum discharge rate from these 104 wells is anticipated to be a total of 2,080 gpm or 4.6 cfs to impoundments. Using an assumed conveyance loss of 20% (PRB FEIS pg 4-74) and full containment the produced water resurfacing in the Upper Powder River from this action (4.6 cfs) may add a maximum 3.7 cfs to the Upper Powder River flows, or 5.4% of the predicted total CBNG produced water contribution. This incremental volume is statistically below the measurement capabilities for the volume of flow of the Upper Powder River (refer to Statistical Methods in Water Resources U.S. Geological Survey, Techniques of Water-Resources Investigations Book 4, Chapter A3 2002, D.R. Helsel and R.M. Hirsch authors). For more information regarding the maximum predicted water impacts resulting from the discharge of produced water, see Table 4-6 (PRB-FEIS pg 4-85).

A portion of the produced water in the Carr Draw III West POD will be transferred into existing pipelines to two different Emit treatment facilities located on the Powder River and Barber Creek. This strategy will result in less water resurfacing at the Powder River from infiltration. However, due to direct discharge from the EMITs facilities larger volumes of CBNG water will reach the Upper Powder River.

No water will be discharged within the POD boundary. All effluent will be transported to off-project facilities, therefore no impacts to the watersheds within the plan of development are anticipated. The areas receiving the water from this action have been previously analyzed for compliance to BLM and WDEQ requirements. Most of the PODs have been in production for some time and produced water quantity has declined. The WDEQ permits water discharge point water quantity as well as water quality, therefore the addition of the water to the existing water management systems should not significantly increase the water volume nor change water quality from that which was previously analyzed and approved.

The operator has obtained numerous Wyoming Pollutant Discharge Elimination System (WYPDES) permit for the discharge of water produced from this project from the WDEQ. See the water management plans associated with Schoonover Road Unit 1, 2, 3, & 5 PODs and South Prong Unit 1, 2, & 3 PODs for more details on effluent limits. See table 4.5 for the specific WYPDES numbers. Many of the WYPDES permits include irrigation compliance points at which the operator will be required to monitor flowrate and water quality on a regular basis.

In order to determine the actual water quality of the producing formations in this POD and to verify the water analysis submitted for the pre-approval evaluation, the operator has committed to designate a reference well to each coal zone within the POD boundary. The reference well will be sampled at the wellhead for analysis within sixty days of initial production. A copy of the water analysis will be submitted to the BLM Authorized Officer.

As stated previously, the operator has committed to offer water well agreements to properly permitted domestic and stock water wells within the circle of influence of the proposed CBNG wells.

In-channel downstream impacts are addressed in the WMP for the Carr Draw III West POD prepared by Western Land Services for Williams Production RMT Company.

4.3.2.1. Surface Water Cumulative Effects

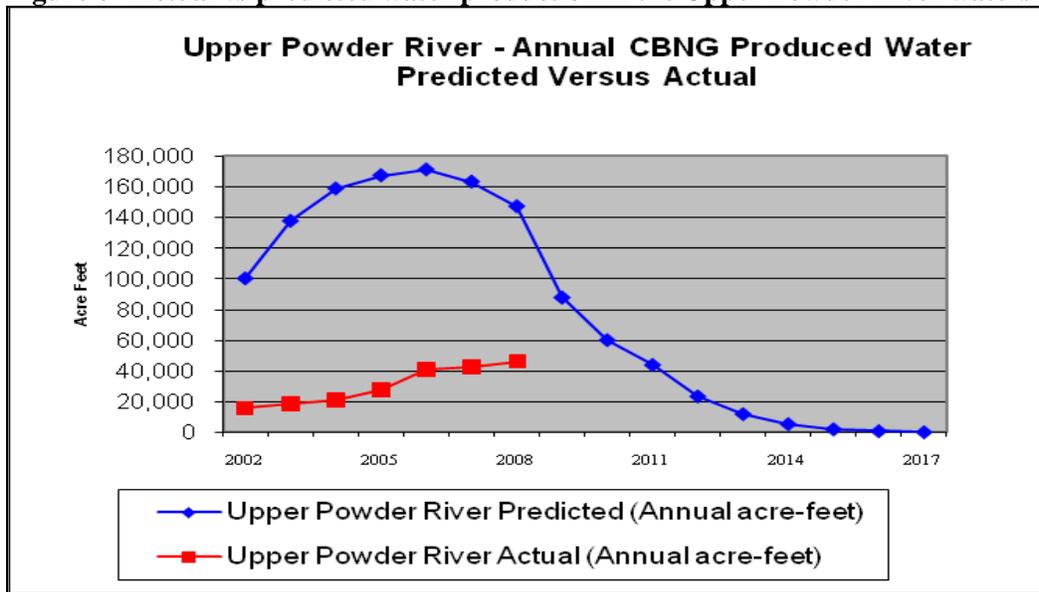
The analysis in this section includes cumulative data from Fee, State and Federal CBNG development in the watershed. These data were obtained from the Wyoming Oil and Gas Conservation Commission (WOGCC).

As of December 2008, all producing CBNG wells in the Upper Powder River watershed have discharged a cumulative volume of 212,522 acre-ft of water compared to the predicted 1,047,521 acre-ft disclosed in the PRB FEIS (Table 2-8 page 2-26). These figures are presented graphically in Figure 4.1 and Table 4.6 following. This volume is 20.3 % of the total predicted produced water analyzed in the PRB FEIS for the watershed.

Table 4.5 Actual vs predicted water production in the Upper Powder River watershed *2008 Data Update 06-08-09*

Year	Upper Powder River Predicted (Annual acre-feet)	Upper Powder River Predicted (Cumulative acre-feet from 2002)	Upper Powder River Actual (Annual acre-feet)		Upper Powder River Actual (Cumulative acre-feet from 2002)	
			A-ft	% of Predicted	A-Ft	% of Predicted
2002	100,512	100,512	15,846	15.8	15,846	15.8
2003	137,942	238,454	18,578	13.5	34,424	14.4
2004	159,034	397,488	20,991	13.2	55,414	13.9
2005	167,608	565,096	27,640	16.5	83,054	14.7
2006	171,423	736,519	40,930	23.9	123,984	16.8
2007	163,521	900,040	42,112	25.8	166,096	18.5
2008	147,481	1,047,521	45,936	31.1	212,522	20.3
2009	88,046	1,135,567				
2010	60,319	1,195,886				
2011	44,169	1,240,055				
2012	23,697	1,263,752				
2013	12,169	1,275,921				
2014	5,672	1,281,593				
2015	2,242	1,283,835				
2016	1,032	1,284,867				
2017	366	1,285,233				
Total	1,285,233		212,522			

Figure 6 Actual vs predicted water production in the Upper Powder River watershed



The PRB FEIS identified downstream irrigation water quality as the primary issue for CBNG produced water. Electrical Conductivity (EC) and SAR are the parameters of concern for suitability of irrigation water. The water quality analysis in the PRB FEIS was conducted using produced water quality data, where available, from existing wells within each of the ten primary watersheds in the Powder River Basin. These predictions of EC and SAR can only be reevaluated when additional water quality sampling is available.

The PRB FEIS states, “Cumulative effects to the suitability for irrigation of the Powder River would be minimized through the interim Memorandum of Cooperation (MOC) that the Montana and Wyoming DEQ’s (Departments of Environmental Quality) have signed. This MOC was developed to ensure that designated uses downstream in Montana would be protected while CBM development in both states continued. However, this MOC has expired and has not been renewed. The EPA has approved the Montana Surface Water Standards for EC and SAR and as such the WDEQ is responsible for ensuring that the Montana standards are met at the state line under the Clean Water Act (CWA). Thus, through the implementation of in-stream monitoring and adaptive management, water quality standards and interstate agreements can be met.” (PRB FEIS page 4-117)

As referenced above, the PRB FEIS did disclose that cumulative impacts may occur as a result of discharged produced CBNG water. The cumulative effects relative to this project are within the analysis parameters and impacts described in the PRB FEIS for the following reasons:

1. They are proportional to the actual amount of cumulatively produced water in the drainage, which is approximately 20.3% of the total predicted in the PRB FEIS.
2. The WDEQ enforcement of the terms and conditions of the WYPDES permit that are designed to protect irrigation downstream.
3. The commitment by the operator to monitor the volume of water discharged.

No additional mitigation measures are required. Refer to the PRB FEIS, Volume 2, page 4-115 – 117 and table 4-13 for cumulative effects relative to the watershed and page 117 for cumulative effects common to all sub-watersheds.

4.4. Cultural Resources

If any cultural values [sites, artifacts, human remains (Appendix L PRB FEIS)] are observed during operation of this lease/permit/right-of-way, they will be left intact and the Buffalo Field Manager notified. Further discovery procedures are explained in the *Standard COA* (General)(A)(1).

4.5. Economics and Recovery of CBNG Resources

The cumulative effects associated with Alternative C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4.

4.6. Fluid Minerals

The cumulative effects associated with Alternative C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4. In addition, the table below indicates potential for lost resources and revenue under Alternative D.

Estimated Lost Gas from 32 Undrilled Federal Locations:

Assuming these wells are not drilled and there are no offsetting wells							
Twp	Rng	Sec	Qtr/Qtr	Lease	Well Name	Unrecovered CBM	
						High	Low
50N	76W	3	SWNW	WYW135623	CARU 12-3-5076BG	761	
50N	76W	3	SWNW	WYW135623	CARU 12-3-5076W	1077	
50N	76W	3	NESW	WYW135623	CARU 23-3-5076BG	761	
50N	76W	3	NESW	WYW135623	CARU 23-3-5076W	1077	
50N	76W	3	SWNE	WYW135623	CARU 32-3-5076BG	458	
50N	76W	3	SWNE	WYW135623	CARU 32-3-5076W	320	
50N	76W	3	SWSE	WYW135623	CARU 34-3-5076BG	458	
50N	76W	3	SWSE	WYW135623	CARU 34-3-5076W	320	
50N	76W	10	NWNW	WYW154405	CARU 11-10-5076BG	761	
50N	76W	10	NWNW	WYW154405	CARU 11-10-5076W	1077	
50N	76W	10	SWSW	WYW154405	CARU 14-10-5076BG	689	
50N	76W	10	SWSW	WYW154405	CARU 14-10-5076W	960	
50N	76W	10	NENW	WYW154405	CARU 21-10-5076BG	761	
50N	76W	10	NENW	WYW154405	CARU 21-10-5076W	1077	
50N	76W	10	SWNE	WYW135623	CARU 32-10-5076BG	689	
50N	76W	10	SWNE	WYW135623	CARU 32-10-5076W	960	
50N	76W	10	NESE	WYW135623	CARU 41-10-5076BG	689	
50N	76W	10	NESE	WYW135623	CARU 41-10-5076W	960	
50N	76W	10	SENE	WYW135623	CARU 42-10-5076BG	689	
50N	76W	10	SENE	WYW135623	CARU 42-10-5076W	960	
50N	76W	11	SENE	WYW135623	CARU 22-11-5076BG	689	
50N	76W	11	SENE	WYW135623	CARU 22-11-5076W	960	
50N	76W	11	SWSE	WYW135623	CARU 34-11-5076BG	689	
50N	76W	11	SWSE	WYW135623	CARU 34-11-5076W	960	
50N	76W	11	NESE	WYW135623	CARU 43-11-5076BG	689	
50N	76W	11	NESE	WYW135623	CARU 43-11-5076W	960	
50N	76W	14	NWNW	WYW135623	CARU 11-14-5076BG	575	
50N	76W	14	NWNW	WYW135623	CARU 11-14-5076W	1182	
50N	76W	15	NENE	WYW154405	CARU 41-15-5076BG	524	
50N	76W	15	NENE	WYW154405	CARU 41-15-5076W	1094	
50N	76W	15	SENE	WYW154405	CARU 42-15-5076BG	524	
50N	76W	15	SENE	WYW154405	CARU 42-15-5076W	1094	

All numbers are in thousands of MCF, Low numbers were not used since there is no production surrounding these wells.

Assuming these wells are not drilled but all surrounding 80s are							
Twp	Rng	Sec	Qtr/Qtr	Lease	Well Name	Unrecovered CBM	
						High	Low
50N	76W	3	SWNW	WYW135623	CARU 12-3-5076BG	84	
50N	76W	3	SWNW	WYW135623	CARU 12-3-5076W	118	
50N	76W	3	NESW	WYW135623	CARU 23-3-5076BG	84	
50N	76W	3	NESW	WYW135623	CARU 23-3-5076W	118	
50N	76W	3	SWNE	WYW135623	CARU 32-3-5076BG	50	
50N	76W	3	SWNE	WYW135623	CARU 32-3-5076W	35	
50N	76W	3	SWSE	WYW135623	CARU 34-3-5076BG	50	
50N	76W	3	SWSE	WYW135623	CARU 34-3-5076W	35	
50N	76W	10	NWNW	WYW154405	CARU 11-10-5076BG	84	
50N	76W	10	NWNW	WYW154405	CARU 11-10-5076W	118	
50N	76W	10	SWSW	WYW154405	CARU 14-10-5076BG	76	
50N	76W	10	SWSW	WYW154405	CARU 14-10-5076W	106	
50N	76W	10	NENW	WYW154405	CARU 21-10-5076BG	84	
50N	76W	10	NENW	WYW154405	CARU 21-10-5076W	118	
50N	76W	10	SWNE	WYW135623	CARU 32-10-5076BG	76	
50N	76W	10	SWNE	WYW135623	CARU 32-10-5076W	106	
50N	76W	10	NESE	WYW135623	CARU 41-10-5076BG	76	
50N	76W	10	NESE	WYW135623	CARU 41-10-5076W	106	
50N	76W	10	SENE	WYW135623	CARU 42-10-5076BG	76	
50N	76W	10	SENE	WYW135623	CARU 42-10-5076W	106	
50N	76W	11	SENE	WYW135623	CARU 22-11-5076BG	76	
50N	76W	11	SENE	WYW135623	CARU 22-11-5076W	106	
50N	76W	11	SWSE	WYW135623	CARU 34-11-5076BG	76	
50N	76W	11	SWSE	WYW135623	CARU 34-11-5076W	106	
50N	76W	11	NESE	WYW135623	CARU 43-11-5076BG	76	
50N	76W	11	NESE	WYW135623	CARU 43-11-5076W	106	
50N	76W	14	NWNW	WYW135623	CARU 11-14-5076BG	63	
50N	76W	14	NWNW	WYW135623	CARU 11-14-5076W	130	
50N	76W	15	NENE	WYW154405	CARU 41-15-5076BG	58	
50N	76W	15	NENE	WYW154405	CARU 41-15-5076W	120	
50N	76W	15	SENE	WYW154405	CARU 42-15-5076BG	58	
50N	76W	15	SENE	WYW154405	CARU 42-15-5076W	120	

All numbers are in thousands of MCF, Low numbers were not used since there is no production surrounding these wells.

4.7. Cultural Resources

Non eligible sites 48CA5129, 48CA5131, 48CA5813, 48CA5821, 48CA5822, 48CA5827, 48CA5833, 48CA5834, 48CA5835, 48CA5836, 48CA5838, 48CA5839, 48CA5840, 48CA5841, and 48CA6967, will be impacted by the proposed project. No historic properties will be impacted by the proposed project. Following the Wyoming State Protocol Section VI (A) (1) the Bureau of Land Management electronically notified the Wyoming State Historic Preservation Officer (SHPO) on 8/31/2009 that no historic properties exist within the APE.

If any cultural values [sites, artifacts, human remains (Appendix L PRB FEIS)] are observed during operation of this lease/permit/right-of-way, they will be left intact and the Buffalo Field Manager notified. Further discovery procedures are explained in the Standard COA (General)(A)(1).

4.8. Air Quality

In the project area, air quality impacts would occur during construction (due to surface disturbance by

earth-moving equipment, vehicle traffic fugitive dust, well testing, as well as drilling rig and vehicle engine exhaust) and production (including non-CBM well production equipment, booster and pipeline compression engine exhaust). The amount of air pollutant emissions during construction would be controlled by watering disturbed soils, and by air pollutant emission limitations imposed by applicable air quality regulatory agencies. Air quality impacts modeled in the PRB FEIS concluded that projected oil & gas development would not violate any local, state, tribal or federal air quality standards.

5. ALTERNATIVE D

Only specific differences from alternative C will be discussed. Alternative D was not explored during the onsite, however following the onsite inspection; the BLM Interdisciplinary Team (IDT) reviewed the surface use and wildlife data with the changes agreed to in the field. The BLM-IDT identified that further mitigation to reduce the loss of elk habitat within the project area was warranted. BLM determined that the greatest impact to the habitat from the proposed action is the fragmentation of elk security habitat on a landscape scale, specifically the proposed road segments to various well locations, and an increase in habitat edge proposed in Alternative C. The following proposal will be recommended to the operator as mitigation to reduce the impacts of habitat loss and habitat fragmentation within the Carr Draw III West POD.

5.1. Vegetation & Soils Direct and Indirect Effects

Trenching construction will remove vegetation while burying proposed and existing overhead power until reclamation restores native habitat. Consolidated linear infrastructure will maintain native soil and vegetation.

5.1.1. Cumulative effects for Vegetation and Soils

No additional mitigation measures are required.

5.2. Wildlife

5.2.1. Big Game Direct and Indirect Effects

The only difference in effects between Alternative C and D relate to the impact associated with elk and recovery of CBNG.

The following wells are within elk parturition range. Removal of these wells and consolidation through directional drilling from locations not included in the list below, would reduce well density to 4 wells per square mile, reducing impacts associated with the proposed project from extreme to high, as referenced in the Wyoming Game and Fish Department's "*Recommendations for Development of Oil and Gas Resources Within Important Wildlife Habitats*" (WGFD 2009).

Well Name	Well Number	Qtr	Sec	T	R	Lease Number
CARR DRAW III W CARU	12-3-5076BG	SWNW	S3	50N	76W	WYW135623
CARR DRAW III W CARU	12-3-5076W	SWNW	S3	50N	76W	WYW135623
CARR DRAW III W CARU	23-3-5076BG	NESW	S3	50N	76W	WYW135623
CARR DRAW III W CARU	23-3-5076W	NESW	S3	50N	76W	WYW135623
CARR DRAW III W CARU	32-3-5076BG	SWNE	S3	50N	76W	WYW135623
CARR DRAW III W CARU	32-3-5076W	SWNE	S3	50N	76W	WYW135623
CARR DRAW III W CARU	34-3-5076BG	SWSE	S3	50N	76W	WYW135623
CARR DRAW III W CARU	34-3-5076W	SWSE	S3	50N	76W	WYW135623
CARR DRAW III W CARU	11-10-5076BG	NWNW	S10	50N	76W	WYW154405
CARR DRAW III W CARU	11-10-5076W	NWNW	S10	50N	76W	WYW154405
CARR DRAW III W CARU	14-10-5076BG	SWSW	S10	50N	76W	WYW154405
CARR DRAW III W CARU	14-10-5076W	SWSW	S10	50N	76W	WYW154405

CARR DRAW III W CARU	21-10-5076BG	NENW	S10	50N	76W	WYW154405
CARR DRAW III W CARU	21-10-5076W	NENW	S10	50N	76W	WYW154405
CARR DRAW III W CARU	32-10-5076BG	SENE	S10	50N	76W	WYW135623
CARR DRAW III W CARU	32-10-5076W	SENE	S10	50N	76W	WYW135623
CARR DRAW III W CARU	41-10-5076BG	NESE	S10	50N	76W	WYW135623
CARR DRAW III W CARU	41-10-5076W	NESE	S10	50N	76W	WYW135623
CARR DRAW III W CARU	42-10-5076BG	SENE	S10	50N	76W	WYW135623
CARR DRAW III W CARU	42-10-5076W	SENE	S10	50N	76W	WYW135623
CARR DRAW III W CARU	34-11-5076BG	SWSE	S11	50N	76W	WYW135623
CARR DRAW III W CARU	34-11-5076W	SWSE	S11	50N	76W	WYW135623
CARR DRAW III W CARU	11-14-5076BG	NWNW	S11	50N	76W	WYW135623
CARR DRAW III W CARU	11-14-5076W	NWNW	S11	50N	76W	WYW135623
CARR DRAW III W CARU	41-15-5076BG	NENE	S15	50N	76W	WYW154405
CARR DRAW III W CARU	41-15-5076W	NENE	S15	50N	76W	WYW154405
CARR DRAW III W CARU	42-15-5076BG	SENE	S15	50N	76W	WYW154405
CARR DRAW III W CARU	42-15-5076W	SENE	S15	50N	76W	WYW154405

In addition to the mitigation included in Alternative C and reduction of well density from the removal of the above wells, the following mitigation should also be incorporated to address high impacts to parturition range:

1. Develop a travel plan that minimizes frequency of trips on well field roads.
2. Habitat treatments to maintain functions within or adjacent to the well field
3. Off-site or Off-lease mitigation

By removing the 16 proposed well locations, Williams Production RMT Company will lose 1,280 acres of CBNG drainage potential from the Carr Draw III West POD. Since Williams is the lease holder for all the adjacent leases in the surrounding area, no other operator can drill wells that can drain this acreage. The fluid mineral resource could be extracted at a later time as drilling technology grows to allow for the effects on the surface to be avoided (i.e. directional drilling).

The following wells are in line of sight and less than 0.5 mile from the mapped elk security habitat. BLM estimates that 10% of the elk security habitat has been lost due to energy development to date within the Yearlong elk range of Fortification Creek. These locations and associated access roads would impact approximately 317 acres of mapped elk security habitat. This would allow for 462 acres of security habitat to remain within the parturition range, specifically in an area showing intensive use by elk in the spring months, within the project area.

Well Name	Well Number	Qtr	Sec	T	R	Lease Number
CARR DRAW III W CARU	14-10-5076BG	SWSW	S10	50N	76W	WYW154405
CARR DRAW III W CARU	14-10-5076W	SWSW	S10	50N	76W	WYW154405
CARR DRAW III W CARU	11-14-5076BG	NWNW	S11	50N	76W	WYW135623
CARR DRAW III W CARU	11-14-5076W	NWNW	S11	50N	76W	WYW135623
CARR DRAW III W CARU	41-15-5076BG	NENE	S15	50N	76W	WYW154405
CARR DRAW III W CARU	41-15-5076W	NENE	S15	50N	76W	WYW154405
CARR DRAW III W CARU	42-15-5076BG	SENE	S15	50N	76W	WYW154405
CARR DRAW III W CARU	42-15-5076W	SENE	S15	50N	76W	WYW154405

By removing the 4 proposed well locations, Williams Production RMT Company will lose 320 acres of CBNG drainage potential from the Carr Draw III West POD. Since Williams is the lease holder for all the adjacent leases in the surrounding area, no other operator can drill wells that can drain this acreage.

The fluid mineral resource could be extracted at a later time as drilling technology grows to allow for the effects on the surface to be avoided; i.e. directional drilling.

5.2.1.1. Cumulative effects for Big Game

The cumulative effects associated with Alternative D are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, page 4-211. No additional mitigation measures are required.

5.2.2. Migratory Birds Direct and Indirect Effects

Of the alternatives considered in this Environmental Analysis, Alternative D contains the least habitat impact to migratory birds.

5.2.2.1. Cumulative effects for Migratory Birds

The cumulative effects associated with Alternative D are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, Page 4-235. No additional mitigation measures are required.

5.2.3. Raptors Direct and Indirect Effects

Of the alternatives considered in this Environmental Analysis, Alternative D contains the least habitat impact to raptors.

5.2.3.1. Cumulative effects for Raptors

The cumulative effects associated with Alternative D are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, page 4-221. No additional mitigation measures are required.

5.2.4. Threatened and Endangered and Sensitive Species

5.2.4.1. Threatened and Endangered Species Direct and Indirect Effects

5.2.4.1.1. Bald eagle

Of the alternatives considered in this Environmental Analysis, Alternative D contains the least habitat impact to bald eagles.

5.2.4.2. Sensitive Species Direct and Indirect Effects

5.2.4.2.1. Greater sage-grouse

Of the alternatives considered in this Environmental Analysis, Alternative D would reduce the negative impact to sage-grouse and habitat fragmentation of habitat as well as accelerate return to habitat effectiveness at reclamation.

Trenching construction would temporarily remove habitat while burying proposed and existing overhead power outside of existing corridors. This will cause a short-term disturbance and direct habitat loss; however, effective reclamation should provide some habitat value as these areas are reclaimed and native vegetation becomes established. This alternative would improve sage grouse habitat by removing vertical intrusions and consolidating most linear infrastructure with access roads.

Eliminating surface disturbing or disruptive activities (to include disruptive maintenance activities such as a “work over rig”) from March 1 to July 15 would reduce adverse impacts to nesting success.

5.2.4.2.2. Sharp-tailed grouse

Impacts to sharp-tailed grouse are similar to that of sage-grouse.

5.2.4.3. Cumulative effects for Sharp-tailed grouse

The cumulative effects associated with Alternative D are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, page 4-271. No additional mitigation measures are required.

5.3. Economics and Recovery of CBNG Resource (Fluid minerals, socio-economics)

The cumulative effects associated with Alternative D are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4.

5.4. Comparison Summary of Effects By Cumulative effects

The cumulative effects associated with Alternative D are within the analysis parameters and impacts described I the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, page4-271. No additional mitigation measures are required.

Table 5.1 Cumulative Effects

Resource/Species	Alternative A	Alternative C	Alternative D Elk emphasis
Wetlands/Riparian Areas	No existing wetlands/riparian areas would be disturbed.		
Wildlife			
Big Game	No habitat loss or fragmentation. Would likely see increased traffic passing through due to surrounding mineral development	Greatest habitat loss.	Least habitat loss.
		Greatest habitat fragmentation.	Least habitat fragmentation.
Raptors	No habitat loss.	Greatest foraging habitat fragmentation.	Least foraging habitat fragmentation.
	No wells authorized near nests.		
Migratory Birds	No habitat loss.	Greatest habitat loss.	Least habitat loss.
		Greatest habitat fragmentation.	Least habitat fragmentation.
	No habitat fragmentation.		
		Overhead electric poses predation &	Overhead electric poses predation & collision risk.

Resource/Species	Alternative A	Alternative C	Alternative D Elk emphasis
		collision risk.	
Threatened and Endangered Species			
Bald eagle	No habitat loss	Overhead electricity increasing mortality risk from electrocution.	Overhead electricity increasing mortality risk from electrocution.
Sensitive Species			
Greater Sage Grouse	No habitat loss.	Greatest habitat loss.	Least habitat loss.
	No decision on overhead electricity. Overhead power could be routed through project area on private surface without BLM discretion increasing predation and collision risk. Grouse may avoid overhead power lines.	Greatest predation and collision risk associated with overhead power lines.	Least habitat fragmentation. Increase habitat connectivity. Reduce predators in nesting habitat with eliminating water impoundments.
West Nile Virus	No Impact	Unlikely to have any effect on the overall spread of WNV.	Unlikely to have any effect on the overall spread of WNV.
Water Resources			
CBNG Produced Water	0 gpm water produced		
Groundwater	No Impact		
Surface Water	No Impact		
Long Term Disturbance	No Impact		

A number of other permits are required from Wyoming State and other Federal agencies. These permits are identified in Table A-1 in the PRB FEIS Record of Decision.

6. CONSULTATION/COORDINATION

Contact	Title	Organization	Present at Onsite
Mary Hopkins	Interim WY SHPO	Wyoming State Historic Preservation Office	No
Lynn Jahnke	Wildlife Management Coordinator	WGFD	No
Heather O'Brien	Wildlife Biologist	WGFD	No
Bud Stewart	Energy Development Biologist	WGFD	No

7. OTHER PERMITS REQUIRED

A number of other permits are required from Wyoming State and other Federal agencies. These permits are identified in Table A-1 in the PRB FEIS Record of Decision.

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9. LIST OF INTERDISCIPLINARY TEAM PREPARERS AND REVIEWERS

Andy Perez, Natural Resource Specialist
Casey Freise, Supervisory Natural Resource Specialist
Casey Freise, Hydrology
Matthew Warren, Petroleum Engineer
Karen Klaahsen, Legal Instruments Examiner
Clint Crago, Archaeologist
Jenny Morton, Wildlife Biologist
Jerry Queen, Geologist
Brian Cox, Assistant Field Manager, Resources
Paul Beels, Associate Field Manager, Minerals & Lands
Duane W. Spencer, Field Manager

Interdisciplinary Team Lead: Andy Perez

Appendix A
Detailed Description of Alternatives B, C, D, and
Alternatives Considered but not Analyzed in Detail
Williams Production RMT Company
Carr Draw Federal POD III West
ENVIRONMENTAL ASSESSMENT–WY-070-09-066

1. Alternative A - No Action

A No Action Alternative was considered in the PRB FEIS, Volume 1, pages 2-54 through 2-62. This alternative would consist of no new federal wells. An oil and gas lease grants the lessee the “right and privilege to drill for, mine, extract, remove, and dispose of all oil and gas deposits” in the lease lands, “subject to the terms and conditions incorporated in the lease.” Thus, under this alternative, the operator’s proposal would be denied.

2. Alternative B – The Operators Original Proposed Action

Proposed Action Title/Type:

Williams Production RMT Company’s Carr Draw Federal POD III West Plan of Development (POD) for 109 coal bed natural gas well APD’s and associated infrastructure.

Proposed Well Information:

There were 109 wells proposed within this POD; the wells are vertical bores proposed on an 80 acre spacing pattern with 2 wells per location. Each well will produce from one coal seam, the Big George or the Wall coal seam. Proposed well house dimensions are 6 ft wide x 8 ft length x 6 ft height. The well house color will be determined by the surrounding vegetation. The Proposed wells are located as follows:

	Well Name	Well #	Qtr/Qtr	Section	TWP	RNG	Lease#
1	CARR DRAW III W CARU	14-2BG	SWSW	2	50N	76W	WYW135623
2	CARR DRAW III W CARU	14-2W	SWSW	2	50N	76W	WYW135623
3	CARR DRAW III W CARU	12-3W	SWNW	3	50N	76W	WYW135623
4	CARR DRAW III W CARU	12-3BG	SWNW	3	50N	76W	WYW135623
5	CARR DRAW III W CARU	32-3BG	SWNE	3	50N	76W	WYW135623
6	CARR DRAW III W CARU	32-3W	SWNE	3	50N	76W	WYW135623
7	CARR DRAW III W CARU	23-3BG	NESW	3	50N	76W	WYW135623
8	CARR DRAW III W CARU	23-3W	NESW	3	50N	76W	WYW135623
9	CARR DRAW III W CARU	24-3BG	SESW	3	50N	76W	WYW135623
10	CARR DRAW III W CARU	24-3W	SESW	3	50N	76W	WYW135623
11	CARR DRAW III W CARU	34-3BG	SWSE	3	50N	76W	WYW135623
12	CARR DRAW III W CARU	34-3W	SWSE	3	50N	76W	WYW135623
13	CARR DRAW III W CARU	43-3BG	NESE	3	50N	76W	WYW135623
14	CARR DRAW III W CARU	43-3W	NESE	3	50N	76W	WYW135623
15	CARR DRAW III W CARU	14-9BG	SWSW	9	50N	76W	WYW154405
16	CARR DRAW III W CARU	14-9LW	SWSW	9	50N	76W	WYW154405
17	CARR DRAW III W CARU	34-9BG	SWSE	9	50N	76W	WYW154405

	Well Name	Well #	Qtr/Qtr	Section	TWP	RNG	Lease#
18	CARR DRAW III W CARU	34-9LW	SWSE	9	50N	76W	WYW154405
19	CARR DRAW III W CARU	23-9BG	NESW	9	50N	76W	WYW154405
20	CARR DRAW III W CARU	23-9LW	NESW	9	50N	76W	WYW154405
21	CARR DRAW III W CARU	43-9BG	NESE	9	50N	76W	WYW154405
22	CARR DRAW III W CARU	43-9W	NESE	9	50N	76W	WYW154405
23	CARR DRAW III W CARU	21-10BG	NENW	10	50N	76W	WYW154405
24	CARR DRAW III W CARU	23-10BG	NESW	10	50N	76W	WYW154405
25	CARR DRAW III W CARU	23-10W	NESW	10	50N	76W	WYW154405
26	CARR DRAW III W CARU	32-10BG	SWNE	10	50N	76W	WYW135623
27	CARR DRAW III W CARU	32-10W	SWNE	10	50N	76W	WYW135623
28	CARR DRAW III W CARU	11-10BG	NWNW	10	50N	76W	WYW154405
29	CARR DRAW III W CARU	11-10W	NWNW	10	50N	76W	WYW154405
30	CARR DRAW III W CARU	14-10BG	SWSW	10	50N	76W	WYW154405
31	CARR DRAW III W CARU	14-10W	SWSW	10	50N	76W	WYW154405
32	CARR DRAW III W CARU	21-10W	NENW	10	50N	76W	WYW154405
33	CARR DRAW III W CARU	24-10BG	SESW	10	50N	76W	WYW154405
34	CARR DRAW III W CARU	24-10W	SESW	10	50N	76W	WYW154405
35	CARR DRAW III W CARU	41-10BG	NENE	10	50N	76W	WYW135623
36	CARR DRAW III W CARU	41-10W	NENE	10	50N	76W	WYW135623
37	CARR DRAW III W CARU	43-10BG	NESE	10	50N	76W	WYW135623
38	CARR DRAW III W CARU	43-10W	NESE	10	50N	76W	WYW135623
39	CARR DRAW III W CARU	12-11BG	SWNW	11	50N	76W	WYW135623
40	CARR DRAW III W CARU	12-11W	SWNW	11	50N	76W	WYW135623
41	CARR DRAW III W CARU	14-11BG	SWSW	11	50N	76W	WYW135623
42	CARR DRAW III W CARU	14-11W	SWSW	11	50N	76W	WYW135623
43	CARR DRAW III W CARU	21-11BG	NENW	11	50N	76W	WYW135623
44	CARR DRAW III W CARU	21-11W	NENW	11	50N	76W	WYW135623
45	CARR DRAW III W CARU	34-11BG	SWSE	11	50N	76W	WYW135623
46	CARR DRAW III W CARU	34-11W	SWSE	11	50N	76W	WYW135623
47	CARR DRAW III W CARU	43-11BG	NESE	11	50N	76W	WYW135623
48	CARR DRAW III W CARU	43-11W	NESE	11	50N	76W	WYW135623
49	CARR DRAW III W CARU	22-11BG	SENW	11	50N	76W	WYW135623
50	CARR DRAW III W CARU	22-11W	SENW	11	50N	76W	WYW135623
51	CARR DRAW III W CARU	12-13BG	SWNW	13	50N	76W	WYW146290
52	CARR DRAW III W CARU	12-13W	SWNW	13	50N	76W	WYW146290
53	CARR DRAW III W CARU	32-14BG	SWNE	14	50N	76W	WYW135623
54	CARR DRAW III W CARU	32-14W	SWNE	14	50N	76W	WYW135623
55	CARR DRAW III W CARU	34-14BG	SWSE	14	50N	76W	WYW135623
56	CARR DRAW III W CARU	34-14W	SWSE	14	50N	76W	WYW135623
57	CARR DRAW III W CARU	41-14BG	NENE	14	50N	76W	WYW135623

	Well Name	Well #	Qtr/Qtr	Section	TWP	RNG	Lease#
58	CARR DRAW III W CARU	41-14W	NENE	14	50N	76W	WYW135623
59	CARR DRAW III W CARU	43-14BG	NESE	14	50N	76W	WYW135623
60	CARR DRAW III W CARU	43-14W	NESE	14	50N	76W	WYW135623
61	CARR DRAW III W CARU	12-14BG	SWNW	14	50N	76W	WYW135623
62	CARR DRAW III W CARU	12-14W	SWNW	14	50N	76W	WYW135623
63	CARR DRAW III W CARU	21-14BG	NENW	14	50N	76W	WYW135623
64	CARR DRAW III W CARU	21-14W	NENW	14	50N	76W	WYW135623
65	CARR DRAW III W CARU	23-14BG	NESW	14	50N	76W	WYW154405
66	CARR DRAW III W CARU	23-14W	NESW	14	50N	76W	WYW154405
67	CARR DRAW III W CARU	14-15BG	SWSW	15	50N	76W	WYW56118
68	CARR DRAW III W CARU	14-15W	SWSW	15	50N	76W	WYW56118
69	CARR DRAW III W CARU	22-15W	SENW	15	50N	76W	WYW92964
70	CARR DRAW III W CARU	23-15BG	NESW	15	50N	76W	WYW56118
71	CARR DRAW III W CARU	23-15W	NESW	15	50N	76W	WYW56118
72	CARR DRAW III W CARU	32-15BG	SWNE	15	50N	76W	WYW154405
73	CARR DRAW III W CARU	32-15W	SWNE	15	50N	76W	WYW154405
74	CARR DRAW III W CARU	41-15BG	NENE	15	50N	76W	WYW154405
75	CARR DRAW III W CARU	41-15W	NENE	15	50N	76W	WYW154405
76	CARR DRAW III W CARU	12-22BG	SWNW	22	50N	76W	WYW040443D
77	CARR DRAW III W CARU	21-22BG	NENW	22	50N	76W	WYW040443C
78	CARR DRAW III W CARU	21-22W	NENW	22	50N	76W	WYW040443C
79	CARR DRAW III W CARU	32-22BG	SWNE	22	50N	76W	WYW040443C
80	CARR DRAW III W CARU	32-22W	SWNE	22	50N	76W	WYW040443C
81	CARR DRAW III W CARU	12-22LW	SWNW	22	50N	76W	WYW040443D
82	CARR DRAW III W CARU	41-22BG	NENE	22	50N	76W	WYW92963
83	CARR DRAW III W CARU	41-22W	NENE	22	50N	76W	WYW92963
84	CARR DRAW III W CARU	14-23BG	SWSW	23	50N	76W	WYW146290
85	CARR DRAW III W CARU	14-23W	SWSW	23	50N	76W	WYW146290
86	CARR DRAW III W CARU	12-23BG	SWNW	23	50N	76W	WYW146290
87	CARR DRAW III W CARU	12-23W	SWNW	23	50N	76W	WYW146290
88	CARR DRAW III W CARU	21-23BG	NENW	23	50N	76W	WYW146290
89	CARR DRAW III W CARU	21-23W	NENW	23	50N	76W	WYW146290
90	CARR DRAW III W CARU	22-23BG	SENW	23	50N	76W	WYW146290
91	CARR DRAW III W CARU	22-23W	SENW	23	50N	76W	WYW146290
92	CARR DRAW III W CARU	24-23BG	SESW	23	50N	76W	WYW146290
93	CARR DRAW III W CARU	24-23W	SESW	23	50N	76W	WYW146290
94	CARR DRAW III W CARU	12-24BG	SWNW	24	50N	76W	WYW146290
95	CARR DRAW III W CARU	12-24W	SWNW	24	50N	76W	WYW146290
96	CARR DRAW III W CARU	12-26BG	SWNW	26	50N	76W	WYW040444A
97	CARR DRAW III W CARU	12-26W	SWNW	26	50N	76W	WYW040444A

	Well Name	Well #	Qtr/Qtr	Section	TWP	RNG	Lease#
98	CARR DRAW III W CARU	12-27BG	SWNW	27	50N	76W	WYW33138
99	CARR DRAW III W CARU	12-27W	SWNW	27	50N	76W	WYW33138
100	CARR DRAW III W CARU	41-27BG	NENE	27	50N	76W	WYW040444A
101	CARR DRAW III W CARU	41-27W	NENE	27	50N	76W	WYW040444A
102	CARR DRAW III W CARU	43-27BG	NESE	27	50N	76W	WYW040444A
103	CARR DRAW III W CARU	21-27BG	NENW	27	50N	76W	WYW040444A
104	CARR DRAW III W CARU	21-27W	NENW	27	50N	76W	WYW040444A
105	CARR DRAW III W CARU	23-27BG	NESW	27	50N	76W	WYW33138
106	CARR DRAW III W CARU	23-27W	NESW	27	50N	76W	WYW33138
107	CARR DRAW III W CARU	33-27BG	NWSE	27	50N	76W	WYW040444A
108	CARR DRAW III W CARU	33-27W	NWSE	27	50N	76W	WYW040444A
109	CARR DRAW III W CARU	43-27W	NESE	27	50N	76W	WYW040444A

County: Campbell

Applicant: Williams Production RMT Company

Surface Owners: William P. Maycock, USA/BLM

Project Description:

The proposed action involves the following:

- Drilling of 109 total federal CBM wells in Big George and Wall Coal zones to depths of approximately 1,131 feet to approximately 2,376 feet. Multiple seams will be produced by co-locating wells (multiple wells at a single location each targeting a single formation).
- Drilling and construction activities are anticipated to be completed within two years, the term of an APD. Drilling and construction occurs year-round in the PRB. Weather may cause delays lasting several days but rarely do delays last multiple weeks. Timing limitations in the form of COAs and/or agreements with surface owners may impose longer temporal restrictions on portions of this POD, but rarely do these restrictions affect an entire POD.
- Williams plans to install electronic natural gas flow measurement equipment utilizing telecommunications data gathering or chart recorders. William's gas measurement will occur at the individual wellhead. Well metering shall be accomplished by telemetry. Well metering by telemetry will require multiple visits per month to each well.
- Williams proposes to utilize an integrated water management system in order to manage effluents produced from the Carr Draw III West project. This system will include existing and proposed water management infrastructure with BLM approved and pending Federal PODs which include three approved waterline Right-of-Way Sundries (Waterline Sundry, Somerville Waterline Sundry 1, and Somerville Waterline Sundry 2), and one pending waterline sundry (Barber Creek Waterline Sundry). All effluent produced from the proposed 109 federal wells and 18 fee wells for a total of 127 wells (including fee wells) within the Carr Draw III West project will be transported by common waterline systems to off-project facilities associated with these PODs and waterline sundries that are located to the south, southeast, and west of the Carr Draw III West project. The existing off-project infrastructure that will be utilized for water management includes: Williams BLM approved Schoonover Road Unit 1&2, Schoonover Road Unit 3,

Schoonover Road Unit 5, South Prong Unit 3, South Prong Unit 1 and 2, Waterline Sundry (“Black Bullet”), Somerville Waterline Sundry 1, and Somerville Waterline Sundry 2. The information pertaining to the specific water management infrastructure for these projects can be reviewed in their perspective POD WMP’s.

- An unimproved and improved road network.
- An above ground power line network to be constructed by a combination of a private contractor and the Public Utility Company. The proposed route has not been finalized by the contractor or the Public Utility Company. Any power line route changes are not within the control of Williams and Williams will not be notified of route changes. Those changes could be due to landowner selection, load evaluation and line capability or as a result of requests for power by other entities.

Any changes to the power drops are determined by Williams Production RMT. Any changes to those locations will be permitted via sundry application and analyzed in a separate NEPA action. Power line construction has not yet been scheduled and will not be completed before the wells are in production. Temporary diesel generators shall be placed at all indicated power drops.

- A storage tank of 1000 gallon capacity shall be located with each diesel generator. Generators are projected to be in operation for up to 12 months. Fuel deliveries are anticipated to be 2 times per week. Please refer to the Carr Draw III West POD in the Master Surface Use Plan (MSUP) for further detail on noise level of the possible generators to be used, measured at 50 and 100 feet at the end of the MSUP.
- A buried gas, water and power line network.
- There are no proposed central gathering/metering facilities or compression facilities.

For a detailed description of design features, construction practices and water management strategies associated with the proposed action, refer to the Master Surface Use Plan (MSUP), Drilling Plan and WMP in the POD and individual APDs. Also see the subject POD for maps showing the proposed well locations and associated facilities described above. More information on CBNG well drilling, production and standard practices is also available in the PRB FEIS, Volume 1, pages 2-9 through 2-40 (January 2003).

Implementation of committed mitigation measures contained in the MSUP, Drilling Program and WMP, in addition to the Standard COAs contained in the PRB FEIS Record of Decision Appendix A, are incorporated and analyzed in this alternative.

Additionally, the Operator, in their POD, has committed to:

1. Comply with all applicable Federal, State and Local laws and regulations.
2. Obtain the necessary permits for the drilling, completion and production of these wells including water rights appropriations, the installation of water management facilities, water discharge permits, and relevant air quality permits.
3. Offer water well agreements to the owners of record for permitted water wells within ½ mile of a federal CBNG producing well in the POD
4. Provide water analysis from a designated reference well in each coal zone.

The Operator has secured a 3814 Bond.

3. Alternative C – Proposed Action with BLM Specific Mitigation

The description of Alternative C is the same as Alternative B with the addition of the project modifications identified by BLM following the onsite. Alternative C integrates functioning environmental systems during and after construction. In addition, this alternative incorporates many of the protection measures historically utilized for sage-grouse, elk and their habitats protection, and describes methods of avoiding cultural impacts prior to tribal consultations while assimilating drilling of wells on 80 acre spacing, where environmentally feasible.

Proposed Action Title/Type:

Williams Production RMT Company’s Carr Draw Federal POD III West Plan of Development (POD) for 104 coal bed natural gas well APD’s and associated infrastructure.

Proposed Well Information:

There were 104 wells proposed within this POD; the wells are vertical bores proposed on an 80 acre spacing pattern with 2 wells per location. Each well will produce from one coal seam, the Big George or the Wall coal seam. Proposed well house dimensions are 6 ft wide x 8 ft length x 6 ft height. The Well house color will be determined by the surrounding vegetation. The colors will be either Juniper Green or Covert Green and will be chosen on a site specific basis per location depending on the dominant vegetation. There are many areas within the project that are dominated by Juniper and other pine species, Juniper Green will be used in these areas. The areas that are dominated by sagebrush will be painted Covert Green. The Proposed wells are located as follows:

	Well Name	Well #	Qtr/Qtr	Section	TWP	RNG	Lease #
1	CARR DRAW III W CARU	14-2BG*	SWSW	2	50N	76W	WYW135623
2	CARR DRAW III W CARU	14-2W	SWSW	2	50N	76W	WYW135623
3	CARR DRAW III W CARU	23-2BG	NESW	2	50N	76W	WYW135623
4	CARR DRAW III W CARU	23-2GW	NESW	2	50N	76W	WYW135623
5	CARR DRAW III W CARU	12-3W	SWNW	3	50N	76W	WYW135623
6	CARR DRAW III W CARU	12-3BG	SWNW	3	50N	76W	WYW135623
7	CARR DRAW III W CARU	21-3GW	NENW	3	50N	76W	WYW135623
8	CARR DRAW III W CARU	21-3BG	NENW	3	50N	76W	WYW135623
9	CARR DRAW III W CARU	41-3BG	NENE	3	50N	76W	WYW135623
10	CARR DRAW III W CARU	41-3GW	NENE	3	50N	76W	WYW135623
11	CARR DRAW III W CARU	13-3BG	NWSW	3	50N	76W	WYW135623
12	CARR DRAW III W CARU	13-3BW	NWSW	3	50N	76W	WYW135623
13	CARR DRAW III W CARU	23-3BG	NESW	3	50N	76W	WYW135623
14	CARR DRAW III W CARU	23-3W	NESW	3	50N	76W	WYW135623
15	CARR DRAW III W CARU	32-3BG	SWNE	3	50N	76W	WYW135623
16	CARR DRAW III W CARU	32-3W	SWNE	3	50N	76W	WYW135623
17	CARR DRAW III W CARU	34-3W	SWSE	3	50N	76W	WYW135623
18	CARR DRAW III W CARU	34-3BG	SWSE	3	50N	76W	WYW135623
19	CARR DRAW III W CARU	43-3BG	NESE	3	50N	76W	WYW135623

	Well Name	Well #	Qtr/Qtr	Section	TWP	RNG	Lease #
20	CARR DRAW III W CARU	43-3W	NESE	3	50N	76W	WYW135623
21	CARR DRAW III W CARU	34-9BG	SWSE	9	50N	76W	WYW154405
22	CARR DRAW III W CARU	34-9LW	SWSE	9	50N	76W	WYW154405
23	CARR DRAW III W CARU	14-9BG	SWSW	9	50N	76W	WYW154405
24	CARR DRAW III W CARU	14-9LW	SWSW	9	50N	76W	WYW154405
25	CARR DRAW III W CARU	23-9BG	NESW	9	50N	76W	WYW154405
26	CARR DRAW III W CARU	23-9LW	NESW	9	50N	76W	WYW154405
27	CARR DRAW III W CARU	43-9BG	NESE	9	50N	76W	WYW154405
28	CARR DRAW III W CARU	43-9W	NESE	9	50N	76W	WYW154405
29	CARR DRAW III W CARU	41-10BG	NENE	10	50N	76W	WYW135623
30	CARR DRAW III W CARU	41-10W	NENE	10	50N	76W	WYW135623
31	CARR DRAW III W CARU	42-10BG	SENE	10	50N	76W	WYW135623
32	CARR DRAW III W CARU	42-10W	SENE	10	50N	76W	WYW135623
33	CARR DRAW III W CARU	14-10BG	SWSW	10	50N	76W	WYW154405
34	CARR DRAW III W CARU	14-10W	SWSW	10	50N	76W	WYW154405
35	CARR DRAW III W CARU	21-10BG	NENW	10	50N	76W	WYW154405
36	CARR DRAW III W CARU	21-10W	NENW	10	50N	76W	WYW154405
37	CARR DRAW III W CARU	32-10BG	SWNE	10	50N	76W	WYW135623
38	CARR DRAW III W CARU	32-10W	SWNE	10	50N	76W	WYW135623
39	CARR DRAW III W CARU	11-10BG	NWNW	10	50N	76W	WYW154405
40	CARR DRAW III W CARU	11-10W	NWNW	10	50N	76W	WYW154405
41	CARR DRAW III W CARU	21-11BG	NENW	11	50N	76W	WYW135623
42	CARR DRAW III W CARU	21-11W	NENW	11	50N	76W	WYW135623
43	CARR DRAW III W CARU	44-11BG	SESE	11	50N	76W	WYW135623
44	CARR DRAW III W CARU	44-11W	SESE	11	50N	76W	WYW135623
45	CARR DRAW III W CARU	22-11BG	SENE	11	50N	76W	WYW135623
46	CARR DRAW III W CARU	22-11W	SENE	11	50N	76W	WYW135623
47	CARR DRAW III W CARU	34-11BG	SWSE	11	50N	76W	WYW135623
48	CARR DRAW III W CARU	34-11W	SWSE	11	50N	76W	WYW135623
49	CARR DRAW III W CARU	43-11BG	NESE	11	50N	76W	WYW135623
50	CARR DRAW III W CARU	43-11W	NESE	11	50N	76W	WYW135623
51	CARR DRAW III W CARU	34-14BG	SWSE	14	50N	76W	WYW135623
52	CARR DRAW III W CARU	34-14W	SWSE	14	50N	76W	WYW135623
53	CARR DRAW III W CARU	22-14BG	SENE	14	50N	76W	WYW135623
54	CARR DRAW III W CARU	22-14W	SENE	14	50N	76W	WYW135623
55	CARR DRAW III W CARU	31-14BG	NWNE	14	50N	76W	WYW135623

	Well Name	Well #	Qtr/Qtr	Section	TWP	RNG	Lease #
56	CARR DRAW III W CARU	31-14W	NWNE	14	50N	76W	WYW135623
57	CARR DRAW III W CARU	11-14BG	NWNW	14	50N	76W	WYW135623
58	CARR DRAW III W CARU	11-14W	NWNW	14	50N	76W	WYW135623
59	CARR DRAW III W CARU	23-14BG	NESW	14	50N	76W	WYW154405
60	CARR DRAW III W CARU	23-14W	NESW	14	50N	76W	WYW154405
61	CARR DRAW III W CARU	43-14BG	NESE	14	50N	76W	WYW135623
62	CARR DRAW III W CARU	43-14W	NESE	14	50N	76W	WYW135623
63	CARR DRAW III W CARU	12-15BG	SWNW	15	50N	76W	WYW56118
64	CARR DRAW III W CARU	12-15W	SWNW	15	50N	76W	WYW56118
65	CARR DRAW III W CARU	42-15BG	SENE	15	50N	76W	WYW154405
66	CARR DRAW III W CARU	42-15W	SENE	15	50N	76W	WYW154405
67	CARR DRAW III W CARU	14-15BG	SWSW	15	50N	76W	WYW56118
68	CARR DRAW III W CARU	14-15W	SWSW	15	50N	76W	WYW56118
69	CARR DRAW III W CARU	41-15BG	NENE	15	50N	76W	WYW154405
70	CARR DRAW III W CARU	41-15W	NENE	15	50N	76W	WYW154405
71	CARR DRAW III W CARU	33-15BG	NWSE	15	50N	76W	WYW154405
72	CARR DRAW III W CARU	33-15W	NWSE	15	50N	76W	WYW154405
73	CARR DRAW III W CARU	31-22BG	NWNE	22	50N	76W	WYW92963
74	CARR DRAW III W CARU	31-22W	NWNE	22	50N	76W	WYW92963
75	CARR DRAW III W CARU	12-22BG	SWNW	22	50N	76W	WYW040443D
76	CARR DRAW III W CARU	12-22LW	SWNW	22	50N	76W	WYW040443D
77	CARR DRAW III W CARU	21-22BG	NENW	22	50N	76W	WYW040443C
78	CARR DRAW III W CARU	21-22W	NENW	22	50N	76W	WYW040443C
79	CARR DRAW III W CARU	32-22BG	SWNE	22	50N	76W	WYW040443C
80	CARR DRAW III W CARU	32-22W	SWNE	22	50N	76W	WYW040443C
81	CARR DRAW III W CARU	21-23BG	NENW	23	50N	76W	WYW146290
82	CARR DRAW III W CARU	21-23W	NENW	23	50N	76W	WYW146290
83	CARR DRAW III W CARU	23-23W	NESW	23	50N	76W	WYW146290
84	CARR DRAW III W CARU	23-23BG	NESW	23	50N	76W	WYW146290
85	CARR DRAW III W CARU	42-23BG	SENE	23	50N	76W	WYW146290
86	CARR DRAW III W CARU	42-23W	SENE	23	50N	76W	WYW146290
87	CARR DRAW III W CARU	12-23BG	SWNW	23	50N	76W	WYW146290
88	CARR DRAW III W CARU	12-23W	SWNW	23	50N	76W	WYW146290
89	CARR DRAW III W CARU	14-23BG	SWSW	23	50N	76W	WYW146290
90	CARR DRAW III W CARU	14-23W	SWSW	23	50N	76W	WYW146290
91	CARR DRAW III W CARU	22-23BG	SENE	23	50N	76W	WYW146290

	Well Name	Well #	Qtr/Qtr	Section	TWP	RNG	Lease #
92	CARR DRAW III W CARU	22-23W	SEnw	23	50N	76W	WYW146290
93	CARR DRAW III W CARU	12-26BG	SWNW	26	50N	76W	WYW040444A
94	CARR DRAW III W CARU	12-26W	SWNW	26	50N	76W	WYW040444A
95	CARR DRAW III W CARU	12-27BG	SWNW	27	50N	76W	WYW33138
96	CARR DRAW III W CARU	12-27W	SWNW	27	50N	76W	WYW33138
97	CARR DRAW III W CARU	41-27BG	NENE	27	50N	76W	WYW040444A
98	CARR DRAW III W CARU	41-27W	NENE	27	50N	76W	WYW040444A
99	CARR DRAW III W CARU	21-27BG	NENW	27	50N	76W	WYW040444A
100	CARR DRAW III W CARU	21-27W	NENW	27	50N	76W	WYW040444A
101	CARR DRAW III W CARU	43-27W	NESE	27	50N	76W	WYW040444A
102	CARR DRAW III W CARU	33-27BG	NWSE	27	50N	76W	WYW040444A
103	CARR DRAW III W CARU	33-27W	NWSE	27	50N	76W	WYW040444A
104	CARR DRAW III W CARU	43-27BG	NESE	27	50N	76W	WYW040444A

These wells were dropped at the onsite. However, some of these wells were moved and therefore the well numbers changed or were replaced by other wells:

Well #	Well Name	Wells Dropped
1	23-10BG/W	Dropped due to slopes 25 %< and highly erosive soils.
2	24-10BG/W	Dropped due to slopes 25%< and highly erosive soils.
3	43-10BG/W	Dropped due to the elk security patch, slopes 25%<, and highly erosive soils.
4	23-27BG/W	The operator chose to move the well into the Carr Draw IV POD.
5	14-11BG/W	Dropped due to the elk security patch and slopes 25 %< and highly erosive soils.

Surface Owners: Kerry and Stephanie Hayden, Record TJ Ranch Limited Partnership: Jerry Record

Project History:

On March 02, 2006, the original Carr Draw POD was submitted by Williams with a total of 197 APD's. The BLM inspected the area on July 10-19 of 2006. Due to potentially significant impacts to the Fortification Creek elk herd the Carr Draw POD was returned to Williams who then divided the original POD into two PODs. The PODs were separated based on year elk range and parturition elk range. The Carr Draw III East POD borders the Fortification Creek elk herd yearlong range, while the Carr Draw III West POD is within yearlong elk range and elk parturition range. The Carr Draw III East POD was approved on 10/31/2007, with a total 82 APDs. One of the wells in the Carr Draw III East POD resides within the yearlong elk range (21-26 well location with access). The Cumulative Effects to the Fortification Creek Elk Herd Environmental Report (Bills 2007) was completed in September of 2007 and was used in the analysis of the Carr Draw East POD. Williams submitted the Carr Draw III West POD on May 30, 2008. The BLM inspected the Carr Draw III West area on December 9-11, 18, 2008 and January 6, 2009. During and prior to the onsite for the project Williams proposed that they would provide mitigation for the elk in yearlong and in elk parturition ranges by the means of addressing view shed and limiting well visitation frequency to once every 6 weeks. This was to be accomplished both by well placement, use of Pod buildings for well metering, and the SCADA system to meter and monitor wells

throughout the project. However, the exact frequency of needed well visitations has not been fully addressed. The elk security patch that is located in the Carr Draw III West POD is greatly impacted by well placement and visitation as well as the overall development of the entire area.

Project Description:

The proposed action involves the following:

- Drilling of 104 total federal CBM wells, 52 in the Big George and 52 in the Wall coal zones. The depths for the Big George coal zone range approximately from 1176’-1699’ feet and depths for the Wall coal zones range approximately 1840’-2426’ feet. Multiple seams will be produced by co-locating wells (multiple wells at a single location each targeting a single formation). The operator plans to drill the wells into the Wall coal zone first and drill to the Big George coal zone if the thickness of the coal is such that it is economically feasible to produce the gas resource.
- Williams plans to install electronic natural gas flow measurement equipment utilizing telecommunications data gathering or chart recorders. Meter runs and point of delivery (Pod) buildings have been proposed to reduce the amount of visits to each and every well location. The Pod buildings were placed in locations that benefit the resources at hand and within areas that share utility corridors. Many considerations were the determining factor in establishing this type of system; among them were the elk population in the area and dust control.

There are six proposed point of delivery (Pod) buildings and they are located as follows:

Pod Building	T.	R.	Sec.	QTR/QTR
Pod-2	50	76	2	NESW
Pod-3	50	76	3	SESW
Pod-12	50	76	12	SWSW
Pod-16	50	76	16 (State)	NESW
Pod-22	50	76	22	SWNW
Pod-23	50	76	23	NESW

The Pod buildings may handle up to twelve wells each. The dimensions for the Pod buildings are 10’x30’ feet with the exception of the Pod in section 23, which may be slightly larger due to the number of wells it will be servicing. If more area is needed for this Pod a sundry will be submitted by the operator. Please refer to the table in the Carr Draw III West POD in the Master Surface Use Plan (MSUP) under section IV for further detail on which Pods service which wells.

- Williams proposes to utilize an integrated water management system in order to manage effluents produced from the Carr Draw III West project. This system will include existing and proposed water management infrastructure with BLM approved and pending Federal PODs which include three approved waterline Right-of-Way Sundries (Waterline Sundry, Somerville Waterline Sundry 1, and Somerville Waterline Sundry 2), and one pending waterline sundry (Barber Creek Waterline Sundry). All effluent produced from the proposed 104 federal wells and 18 fee wells for a total of 122 wells (including fee wells) within the Carr Draw III West project will be transported by common waterline systems to off-project facilities associated with these PODs and waterline sundries that are located to the south, southeast, and west of the Carr Draw III West project. The existing off-project infrastructure that will be utilized for water management includes: Williams BLM approved Schoonover Road Unit 1&2, Schoonover Road Unit 3, Schoonover Road Unit 5, South Prong Unit 3, South Prong Unit 1 and 2, Waterline Sundry (“Black Bullet”), Somerville Waterline Sundry 1, and Somerville Waterline Sundry 2. The

information pertaining to the specific water management infrastructure for these projects can be reviewed in their perspective POD WMP's.

- Williams Production RMT Company has decided to install the Over Head Power (OHP) rather than having a third party such as Powder River Electric do the installation. Please refer to the Carr Draw Federal POD III West MSUP for further detail.

The installation of the OHP is done in three phases: The delivery of the power poles and the framing of the pole structures, setting of the pole structures, and the delivery of the conductor and neutral wires and installation of the wires. For further detail refer to the Carr Draw Federal POD III West MSUP Over Head Power (OHP) attachment.

There are a few areas where spot upgrades and temporary roads will have to be built to allow safe access for bigger equipment. Please note that these will not be permanent roads and the construction will only be to knock down high spots along the routes and to level the access enough for safe travel. These areas will be reclaimed immediately following the completion of the OHP line. These areas are illustrated on the map attached to the Carr Draw Federal POD III West MSUP and are identified in detail in the site specific reclamation plan included in the OHP attachment.

Williams will report to the BLM any areas where further disturbance is needed as well as any areas where additional working area is needed to safely install the OHP line.

The contractors will follow any local, state, and federal regulations during the installation of OHP lines.

- The power lines from the proposed power drops to the individual wells will be buried. The buried power line network will be constructed by the operator. The proposed route has been reviewed by the contractor. If the proposed route is altered, then the new route will be proposed via sundry application and analyzed in a separate NEPA action. Power line construction has not been scheduled and will not be completed before the CBNG wells are producing. If the power line network is not completed before the wells are in production, then temporary diesel generators shall be placed at the 9 power drops. There will also be a total of 7 distribution panels within the project.
- A storage tank of 1000 gallon capacity shall be located with each diesel generator. Generators are projected to be in operation for 6 to 12 months. Fuel deliveries are anticipated to be 2 times per week. Please refer to the Carr Draw III West POD in the Master Surface Use Plan (MSUP) for further detail on noise level of the possible generators to be used, measured at 50 and 100 feet at the end of the MSUP. Use of the topography, generator housing, and mufflers will be used to further mitigate any noise issues that may occur from the generators. It is William's intention to have a power supply other than the use of generators, such as overhead or buried power, as soon as possible to reduce the use of the fuel run generators.

3.1. Changes as a result of the on-sites

At the on-sites, all areas of proposed surface disturbance were inspected to insure the project would meet BLM multiple use objectives to conserve natural resources while allowing for the extraction of Federal minerals. In some cases, access roads were re-routed, and well locations, pipelines, discharge points and other water management control structures were moved, modified, mitigated or dropped from further consideration to alleviate environmental impacts. Alternatives to different aspects of the proposed action are considered and applied as pre-approval changes, site specific mitigation and/or Conditions of Approval (COAs), if they will alleviate environmental effects of the operator’s proposal. The specific changes identified for the Carr Draw Federal POD III West are listed below.

3.2. Changes as a result of the on-sites

Well #	Well Name	Changes agreed to at the onsite.
1	14-2BG*/W	Location was pulled back to the main corridor and turned into an eyebrow location to reduce surface disturbance. 20' foot vegetated buffer, erosion measures will apply. Changed the access road to a spot upgrade with an overall width of 40' feet. Moved location approximately 200' NW, Williams agreed to 10'x100' foot slot. The well house color and surrounding infrastructure will be Covert Green.
2	23-2BG/GW	The location will be an eyebrow off of the Kinney Divide Road. The location is in the junction of two main resource roads. No pad will be needed. The well house color and surrounding infrastructure will be Covert Green.
3	12-3BG/W	Proposed location is a short spur off of the main road and services one well location. A primitive road will be utilized with an overall width of 40' feet. No pad will be needed. The well house color and surrounding infrastructure will be Juniper Green.
4	21-3BG/GW	Re-oriented the wells east to west on a natural contour. No pad will be needed. The access will consist of a short spur off of the Kinney Divide Road with an overall width of 40' feet. The well house color and surrounding infrastructure will be Juniper Green.
5	32-3BG/W	Williams agreed to pull the access road off of the top of the ridge. The access road was placed in more suitable and reclaimable soils on the west side of the ridge, versus the top of the ridge to avoid erosion features. The access road will be a template design and will accommodate for the mature tree's to further mitigate for the elk view shed. The overall width for the access road will be 50' feet. The well was pulled back NW approximately 375' feet to a more level and stable location eliminating the need for an engineered well pad. A 10'x100' foot slot will be utilized. The mature trees surrounding the location will be used to mitigate for the elk view shed. The original location was sky lined. The well house color and surrounding infrastructure will be Covert Green.
6	23-3BG/W	The well location was moved due east approximately 500'feet for drainage purposes attributed to the 24-3 well move which turned into the 13-3BG/W well and was moved NW of the proposed original location. The 23-3 will require a pad to fit the topography and will encompass a total area of approximately 1.03 acres. The access road will be comprised of a template design with an overall width of 50' feet. However, the very beginning of the access road will consist of a primitive access and will have an overall width of 40' feet. Slope staking will be required prior to the pre-construct. The well house color and surrounding infrastructure will be Covert Green.

7	13-3BG/W	This well location will replace the 24-3 well location which was dropped due to 25% slopes, highly erosive soils, and proximity to the adjacent drainage to the west of the location. The proposed 13-3BG/W location will utilize an existing old two track which will be upgraded to a template road with an overall width of 50' feet. A well pad will be utilized and will encompass a total area of approximately 1.05 acres. The mature tree's surrounding the location will be used to mitigate for the elk view shed. Slope staking will be required prior to the pre-construct. The well house color and surrounding infrastructure will be Juniper Green.
8	34-3BG/W	The wells were oriented to a natural contour on the original proposed location to further minimize surface disturbance. The operator will maintain the integrity of the ridge on the south side of the location to create a natural buffer to mitigate for the elk view shed. A pad will be built to fit the topography and will encompass a total area of approximately 1.01 acres. The access road will be upgraded to a template design with an overall width of 50' feet. A 30 day stabilization COA will be applied to the location as well as the access road. Slope staking will be required prior to the pre-construct. The well house color and surrounding infrastructure will be Juniper Green.
9	41-3BG/GW	The wells were re-oriented east to west and moved approximately 75' feet to the east to utilize Lance Anadarko's existing disturbance. The move and re-orientation of the wells helps mitigate for the elk view shed as well as address safety concerns with the well access and visibility. A 10'x100' foot slot will be utilized for the wells and a 20'x60' foot slot will be needed for the frac tanks. The access will be a template design with an overall width of 50' feet. The well house color and surrounding infrastructure will be Covert Green.
10	43-3BG/W	The proposed location will require an engineered pad approximately .089 acres in size due to a cross slope of approximately 11%. An engineered spot upgrade will be required on a portion of the access road due to a slope of 15%; the overall width of the access road will be approximately 50' feet for the template portion and 40' feet for the remainder of the access road which will be a spot upgrade. Slope staking will be required prior to the pre-construct. A 30 day stabilization COA will apply to the location and the access road. The well house color and surrounding infrastructure will be Covert Green.
11	14-9BG/LW	Per BLM recommendation, shifted the wells North out of a natural blow out. The location will require a pad. The pad will encompass a total area of approximately 0.89 acres. The pad will be constructed to fit the topography and will not affect the tree to the east as well as the blowout adjacent to the tree. A 30 day COA will be required on the well location as well as the access road. The access road will be engineered with an overall width of 60' feet. A portion of the access road will be shared with Lance Anadarko to access the well. Slope staking will be required prior to the pre-construct. The well house color and surrounding infrastructure will be Covert Green.

12	34-9BG/LW	A 30 day stabilization COA will be placed on the access road to the well due to the sandstone blowout on the hill prior to the well. A culvert will need to be installed after the gate and before the hill going to the well location. The access road will be a template design with an overall width of 50' feet with the remainder of the access road being comprised of a spot upgrade with an overall width of 40' feet. A 20' foot vegetated buffer COA will apply to the location and road. Slope staking will be required prior to the pre-construct for the access road. Will utilize a 10'x100' foot slot. The well house color and surrounding infrastructure will be Covert Green.
13	23-9BG/LW	The access road was changed and will come in on the natural contour on the west side of the knob. A template road will be used with an overall width of 50' feet. The wells were shifted to best fit the location in a NE orientation. A pad built to fit the topography will encompass a total area of 1.04 acres. A minimum of a 20' foot vegetated buffer will apply to the drainages adjacent to the location. The majority of the disturbance will be kept on the west side of the location to avoid the steeper slope on the east side. Slope staking will be required prior to the pre-construct. A 30 day stabilization COA will be placed on the location. The well house color and surrounding infrastructure will be Covert Green.
14	43-9BG/W	Moved the well location south to the junction in the road to adjust for drainage purposes, moved further from the raptor nest. The location will not require a pad. The west well will be the BG. The trees and the hillside will be used to mitigate for the elk view shed. The location will be an eyebrow location at the junction of the template design road. The section of proposed improved road running SE from the Y to the north to the 43-9 well location will have a 30 day stabilization COA. The well house color and surrounding infrastructure will be Covert Green.
15	21-10BG/W	The original proposed location is surrounded by erosion features and steep slopes, with the access road placed on a narrow ridge with erosion features and 25% slopes. Williams agreed to pull the location back out, and off of the narrow ridge and moved the location to the SE. The new location is in better soils, more gradual slopes. The new location will require a pad that will encompass a total area of approximately 1.20 acres, and will be built to fit the topography. The access road will be engineered with an overall width of 60' feet. Both the old and new location require engineered pads and roads, reclamation was the driving factor in moving this location. A 30 day stabilization COA will be applied to the location and the access road going to the 32-10 location. Slope staking will be required prior to the pre-construct. The well house color and surrounding infrastructure will be Juniper Green.

16	32-10BG/W	The well location was moved to William's proposed alternate location approximately 150' feet west of the originally proposed location. The alternate location pulled the wells off the top of the ridge and protects the integrity of the elk security patch to the east. Williams will bring the access from the gate on the north side to eliminate the need for two spur roads. The access road will be combined with the access road for the 21-10 location to further eliminate surface disturbance. The portion of the access road going to the 32-10 location will be template design with an overall width of 50' feet. A pad will be built to fit the topography and will encompass a total area of approximately 1.03 acres. Slope staking will be required prior to the pre-construct. The well house color and surrounding infrastructure will be Covert Green.
17	11-10BG/W	Moved wells north 1460 feet to more stable and reclaimable soils. Pulled wells off of the ridge and moved the wells in a natural bowl for reasons stated previously as well as view shed due to raptor and elk issues. The well move helps with drainage. Access road changed, the new route comes off of the main corridor through a natural saddle and follows the natural contour of the hill prior to the well (side hill) on the north/northeast side of the ridge. The road also accommodates for a natural curve coming into the location, thus making the road safer. The access road will be engineered with an overall width of 60' feet. The location will require a slot 10'x100' feet. A 30 day stabilization COA will be placed on the engineered portion of the access road as well as the well location. The well house color and surrounding infrastructure will be Covert Green.
18	14-10BG/W	Moved the well location East along the existing corridor and placed the wells NE of the existing main corridor approximately 300' feet on a natural bench. The wells were moved for drainage purposes and placed in more stable deep loamy soils. The access road will dead end at the wells extra room for a turnaround will be incorporated into the location. The pad will be tear dropped in shape and will be built to best fit the topography, the pad will encompass a total area of approximately 0.65 acres. The access road will come in from the NW off of the existing corridor, on a natural contour using the trees to mitigate for the elk view shed and will curve gently into the cut of the pad. The trees surrounding the pad will also be used to mitigate for the elk view shed and will also serve as a marker for the outer edge of disturbance. A template design road will be utilized on the existing corridor with an overall width of 50' feet. The access road will be engineered from the existing portion to the proposed new well location with an overall width of 60' feet. A 20' foot vegetated buffer will apply to the location and access road, slope staking for pad and road prior to pre-construct, and erosion control measures will apply. A 30 day stabilization COA will be applied to the location and the portion of engineered road going to the well location. The existing corridor from the 14-10 to the 12-15 location will not be used for travel but will be used for a utility corridor. A site specific reclamation plan for this portion of corridor is required. The well house color and surrounding infrastructure will be Juniper Green.
19	41-10BG/W	Location is tucked into a natural saddle. The soils are stable and can be considered a deep loamy. A 10'X100' slot will be utilized. The location will be an eyebrow location. The well house color and surrounding infrastructure will be Covert Green.

20	42-10BG/W	<p>Moved the well north approximately 300 feet due to elk security patch. The well changed from the 12-11 location into the 42-10 due to the well move. The operator will utilize the mature trees to mitigate for the elk view shed; the location is out of line of sight for raptor. Williams agreed to accommodate timing stipulations. A well pad built to best fit the topography will be utilized and will encompass a total area of approximately 0.89 acres. The access will consist of template design with an overall width of 50' feet. The location will need to be slope staked prior to the pre-construct. A 20' foot vegetated buffer will apply to both the location and access road. The well house color and surrounding infrastructure will be Juniper Green.</p>
21	11-14BG/W	<p>The original proposed location was dropped due to 25% slopes, highly erosive soils, and the elk security patch. The 14-11 was replaced by the 11-14 location which was an alternate location proposed by Williams. The 11-14 is located at the beginning of the access to the originally proposed 14-11. The 11-14 location will require a pad. However, the pad is much smaller and has a more balanced cut and fill ratio than the originally proposed location. The well pad will encompass a total area of approximately 0.93 acres. The majority of the access will be an overall width of 40' feet and will consist of a few spot upgrades. Only the hill prior to arriving to the location will need to be engineered and is a relatively short run. A 60' foot width will be used for the engineered segment of road. The location and the engineered portion of the access road will need to be slope staked prior to the pre-construct. A 30 day stabilization COA will apply to the engineered portion of the access road. A 20' foot vegetated buffer will apply to the location. The well house color and surrounding infrastructure will be Covert Green.</p>
22	21-11BG/W	<p>The access road will consist of a template design with an overall width of 50' feet starting from the beginning of the main corridor, and will change to a spot upgrade with an overall width of 40' feet, just past the halfway point between the well and main corridor. Altered the beginning of the access road to avoid the sand stone out cropping and to avoid the steep slope at the beginning of the originally proposed access. The new access comes into the Kinney Divide road at a safer approach angle and is located northwest of the original location. The well will be metered at the road with a POD building. No pad will be needed. Slope staking will be required prior to the pre-construct and a 20' foot vegetated buffer will apply. The well house color and surrounding infrastructure will be Covert Green.</p>
23	43-11BG/W	<p>Moved the well approximately 300' feet down the ridge to avoid drainages and steep slopes. The pad will have to be engineered and built to fit the topography, and will have to maintain a 20' foot vegetated buffer to all surrounding drainages. The well pad will encompass a total area of approximately 0.99 acres. The well will be metered at the main road. The access road will be a template design with an overall width of 50' feet. Slope staking will be required prior to the pre-construct. The well house color and surrounding infrastructure will be Covert Green.</p>
24	44-11BG/W	<p>The location will require an engineered road with an overall width of 60' feet. A well pad will be required and will encompass a total area of approximately 1.17 acres. The location and the access road will need to be slope staked prior to the pre-construct. A 20' foot vegetated buffer will apply to the location and the access road as well as a 30 day stabilization COA. The well house color and surrounding infrastructure will be Covert Green.</p>

25	22-11BG/W	Access road will consist of a template design and a portion of the road will need to be engineered. The portion of the road that will be template design and will have an overall width of 50' feet and the engineered portion will have an overall width of 60' feet. Two portions of the access road will require a reclamation plan. The access road will need to be fully engineered on the hill prior to the well. The access road will utilize the saddle prior to the well; engineering will begin at this point. The location will need a pad, and the pad will be engineered to fit the topography. The pad will need to be elongated due to width restrictions. The pad will encompass a total area of approximately 0.99 acres. This location is a tight location. A 30 day stabilization COA will be applied to the location and access road. A 20' foot vegetated buffer will be applied to the location and access road. Slope staking will be required prior to the pre-construct. The well house color and surrounding infrastructure will be Covert Green.
26	34-11BG/W	Two different alternative locations were looked at; many factors played a role in choosing the best alternative such as spacing, drainage, wildlife issues, and surface disturbance. The well was moved west approximately 450' feet from the proposed location in order to best mitigate for the view shed, reduce the size of the well pad, and facilitate for a better drainage pattern for the project in general. The pad will be built to best fit the topography and will encompass a total area of approximately 0.90 acres. The access road will vary from a spot upgrade with an overall width of 40' feet, with one portion of the access road being template design with an overall width of 50' feet. Slope staking will be required prior to the pre-construct. A 20' foot vegetated buffer will apply to the access road. The well house color and surrounding infrastructure will be Juniper Green.
27	22-14BG/W	Originally was the 32-14 well location. Moved the location to the old P&A site for drainage purposes as well as wildlife issues. Eliminates the need for a well pad. The access road will utilize the existing old road going into the old P&A location and will only require a spot upgrade with an overall width of 40' feet. The new location helps mitigate for the elk view shed by pulling the wells off of the top of the ridge from their original proposed location. The well house color and surrounding infrastructure will be Juniper Green.
28	34-14BG/W	Eyebrow location, will utilize a 10'x100' foot slot. The access road will have an overall width of 40'feet, and is on an existing primitive road. The well house color and surrounding infrastructure will be Covert Green.
29	31-14BG/W	Moved the well south approximately 600' feet along the main access road. Well changed from the originally proposed 41-14 into the 31-14 location. An eyebrow location well be utilized, no pad well be needed. A 20' foot vegetated buffer foot must be maintained to the east side of the location due to the drainage. The well house color and surrounding infrastructure will be Covert Green.
30	43-14BG/W	The well is proposed on an old P&A site, eliminating the need for a well pad. Will utilize the old existing access road going into the P&A location, the road will need to be upgraded to a template design with an overall with of 50' feet. A 20' foot vegetated buffer will apply. 30 day stabilization COA placed on the road as well as the location. The well house color and surrounding infrastructure will be Juniper Green.

31	23-14BG/W	The well was moved south approximately 450 feet and placed in a natural saddle. This move helps with the elk view shed to the east and west. An eyebrow location will be used. The location will require an engineered pad to fit the topography, and will encompass a total area of approximately 0.93 acres. The gate to the south will be utilized, and the access road will be a template design with an overall width of 50' feet. However, this location and portion of road are part of the proposed 100' foot corridor for the POD system. The location and road will be incorporated into this corridor. The well house color and surrounding infrastructure will be Covert Green.
32	14-15BG/W	Pulled the well location in closer to the main corridor, and turned the location into an eyebrow location. No pad will be needed. The access road is an existing improved road with a proposed overall width of 40' feet. The well house color and surrounding infrastructure will be Covert Green.
33	12-15BG/W	Moved the well location off of an erosion feature and narrow ridge top. Moved well location south approximately 750' feet down Maycock Draw. Location changed into the 12-15. A pad built to fit the topography will be utilized and will encompass a total area of 0.31 acres. The location was moved for elk view shed purposes as well as irreclaimability factors. The well will be a dead end location needs to be signed accordingly. The access road will be a template design and will be placed on the west side of the drainage with an overall width of 50' feet. Williams will use road base gravel instead of scoria for the access road. Drainage water will be deferred to the natural drainage to the south of the engineered pad. The well is tucked into the hill and drainage feature to help mitigate for the elk view shed. A 20' foot vegetated buffer will apply to the location and the access road. A 30 day stabilization COA will be applied to the location and the access road. The well house color and surrounding infrastructure will be Covert Green.
34	33-15BG/W	The well location was moved up the hill approximately 1/2 mile from the original proposed location. The new location will be the 33-15. The location will be a dead end and needs to be signed accordingly. The pad will encompass a total area of approximately 0.95 acres and will incorporate a larger turning radius. The pad design itself will incorporate the existing road to the south. The access road will consist of a template design and will have an overall width of 50' feet. This moved was based on preserving the integrity of the elk security patch. The well house color and surrounding infrastructure will be Covert Green.
35	42-15BG/W	Moved the well approximately 900 feet NE, the well turned into the 42-15. The well location was moved into more stable and reclaimable soils. The well move mitigates for the elk view shed. By moving the well, the need for a well pad was eliminated. A 10'x100' foot slot will be utilized. The access road will consist of a template design with an overall width of 50' feet. The well house color and surrounding infrastructure will be Covert Green.
36	41-15BG/W	A 10'x100' foot slot will be utilized. The access road will have an overall width of 40' feet. The well house color and surrounding infrastructure will be Covert Green.
37	12-22BG/LW	Re-oriented the wells further from the existing main corridor to a more level location. No pad will be needed and a drive through location will be feasible. The access will be an eyebrow off of the main corridor. The location and access are on BLM surface. The well house color and surrounding infrastructure will be Covert Green.

38	32-22BG/W	The well location will not require a full blown pad. However, the location will require a small amount of dirt work; fill will be borrowed from the north end of the location. The natural buffer will be left intact where the fill material will be borrowed. The location will require less than two feet of fill on the south west side of the location. A 20' foot vegetated buffer will apply to all drainages, specifically the east side of the location. The access road will consist of a template design with an overall width of 50' feet. A 30 day stabilization COA will be applied to the access road. The location is on BLM surface as well as a portion of the access road. The well house color and surrounding infrastructure will be Covert Green.
39	31-22BG/W	Moved the well location approximately 900' feet due west to mitigate for the elk view shed as well as for the adjacent raptor nest. The well location turned into the 31-22. The location will require a pad built to fit the topography, and will encompass a total area of approximately 0.96 acres. Approximately half of the access road will consist of a spot upgrade with an overall width of 40' feet; the remainder of the access road will be a template design with an overall width of 50' feet. The access road width will be no greater than 12' feet wide on the ridge prior to descending into the well location, at this location the road will not cut into the base of the knoll adjacent to the originally proposed location. The road will need to be surfaced from the knoll to the well. A reclamation plan will also be needed for the access road. 20' foot vegetated buffer will apply on the access road as well as a 30 day stabilization COA. The well house color and surrounding infrastructure will be Covert Green.
40	21-22BG/W	The well location will require a pad. The well pad will encompass a total area of approximately 0.91 acres. The access road will consist of a template design and have an overall width of 50' feet. The beginning of the proposed access runs by a conventional oil well location. The location and access are on BLM surface. The well house color and surrounding infrastructure will be Covert Green.
41	14-23BG/W	The well location was moved south due to slopes and poor soils. By moving the well south it eliminates the need for a pad. A 10'x100' foot slot will be used. The access road will be template design with an overall width of 50' feet. A 20' foot vegetated buffer will apply to all drainages. A 30 Day stabilization COA will be applied to the access road. The well house color and surrounding infrastructure will be Covert Green.
42	12-23BG/W	The well location was moved approximately 175' feet north, this eliminated the need for a pad and a staging area. The staging area will be on the well location to the south on the 23-23 location. The new well location will be an eyebrow location. A 10'x100' foot slot will be needed. The main corridor is part of the disturbance linked to the pod system, the well location and eyebrow will be tied into the pod corridor. The well house color and surrounding infrastructure will be Covert Green.
43	21-23BG/W	The well location will be an eyebrow location. No pad will be needed. The main corridor is part of the disturbance linked to the pod system, the well location and eyebrow will be tied into the pod corridor. The well house color and surrounding infrastructure will be Covert Green.

44	22-23BG/W	A pad built to fit the topography will be utilized and will encompass an area of approximately 0.99 acres. The toe of the fill needs to be out of the drainage. A 20' foot vegetated buffer will apply to the location. The location as well as the road needs to be slope staked prior to the pre-construct. The access road will need to be engineered and will have an overall width of 60' feet. A reclamation plan for the access road and the pad is required due to the soils. A 30 day stabilization COA will be applied to both the access road and the location. The well house color and surrounding infrastructure will be Juniper Green.
45	23-23BG/W	Moved the well north out of the draw up along side of the main corridor due to excessive cut and fills and poor soils. A reclamation plan for the new proposed location, addressing the scoria and how the location will be brought back for final reclamation will be needed. The new proposed location will require a pad and will encompass a total area of approximately 0.99 acres. The location will be used as a potential staging area for the wells to the north. The location will be built to incorporate the adjacent main corridor and will resemble an eyebrow location. A 30 day stabilization COA will apply to the location. The well house color and surrounding infrastructure will be Covert Green.
46	42-23BG/W	The well was moved approximately 1/2 mile NW to the end of the spot upgrade. The well changed into the 42-23. By moving the well it eliminates road engineering and places the well out of the line of site for the eagles. The originally proposed well location was placed in poor soils with fills spilling into the adjacent drainages. The new proposed well pad will be made to best fit the surrounding topography and will encompass a total area of approximately 1.11 acres. The well location will be built to accommodate and avoid the tree to the east, the erosion feature to the south, and will maintain a 20' foot vegetated buffer from the draws to the west. The access spurs off of the main existing corridor on a curve and is relatively short and will consist of a template design with an overall width of 50' feet. The remainder of the access road will be a spot upgrade to the existing road with an overall width of 40' feet. The location and road will require a reclamation plan. Timing stipulations will apply. A 30 day stabilization COA will apply to both the location and the access road. Slope staking will be required prior to the pre-construct. The well house color and surrounding infrastructure will be Covert Green.
47	12-26BG/W	Well location will utilize a 10'x100' foot slot. Location is in good soils. The access is a short spur off of the main corridor. The access road will have an overall width of 40' feet. The well house color and surrounding infrastructure will be Covert Green.
48	12-27BG/W	Well location will utilize a 10'x100' foot slot. The access for this well will be from the south from Carr Draw IV POD. All gas and water will go to the Carr Draw IV POD. A 30 day stabilization COA will be applied to the access road and location. The access road will be template design with an overall width of 50' feet. The well house color and surrounding infrastructure will be Covert Green.

49	41-27BG/W	Power lines inhibited this location from being an eyebrow due to safety concerns while rigging up. The access road will be a short spur from the main corridor, and will consist of a template design with an overall width of 50' feet. The well location will require a 10'x100' foot slot. The well house color and surrounding infrastructure will be Covert Green.
50	21-27BG/W	The access road will come off of the main corridor from the north. The access road will have an engineered portion with an overall width of 60' feet; with the remainder of the access road consisting of a spot upgrade with an overall width of 40' feet. The road was moved approximately 200' feet NE to help maintain the hills integrity and to move road out of the drainage. The road will need to be staked prior to the pre-construct, a 20' foot vegetated buffer will apply on the access road as well as the 30 day stabilization COA. The well location will not require any dirt work. The well house color and surrounding infrastructure will be Covert Green.
51	33-27BG/W	Shifted the access road west approximately 30' feet to avoid 25% slopes and erosive features to the east. The access will be a template design with an overall width of 50' feet for approximately 2/3 of the access. The remainder of the access at the beginning will be a spot upgrade with an overall width of 40' feet. The well location was moved to the south and west approximately 30'-50' feet to avoid 25% slopes. The well pad has been re-designed and will encompass a total area of approximately 0.91 acres. A 30 day stabilization COA will apply as well as 20' foot vegetated buffer to all surrounding drainages for the access road and the well location. The well location and access will need to be staked prior to the pre-construct. All gas and water will go to the Carr Draw IV POD. The well house color and surrounding infrastructure will be Juniper Green.
52	43-27BG/W	Re-oriented and shifted the wells SW approximately 180' feet and turned the location into an eyebrow. Eliminated the need for a pad. The location will utilize a slot for both the frac tanks (20'x60') and wells (10'x100'). All water and gas will go to the Carr Draw IV POD. A 20' foot vegetated buffer will apply to the drainage to the SE and the 30 day stabilization COA will apply to the location. The well house color and surrounding infrastructure will be Covert Green.

3.3. 3.2 Description of Mitigation Measures (applied as Conditions of Approval):

The operator is responsible for the COAs attached to this EA and will be issued an Incident of Non-Compliance if found to be in violation of any COA.

4. Programmatic and Site specific mitigation measures, Alternative C

4.1. Programmatic mitigation measures identified in the PRB FEIS ROD

Programmatic mitigation measures are those, determined through analysis, which may be appropriate to apply at the time of APD approval if site specific conditions warrant. These mitigation measures can be applied by BLM, as determined necessary at the site-specific NEPA APD stage, as COAs and will be in addition to stipulations applied at the time of lease issuance and any standard COA.

4.1.1. Wildlife

1. For any surface-disturbing activities proposed in sagebrush shrublands, the Companies will conduct clearance surveys for sage grouse breeding activity during the sage grouse’s breeding season before initiating the activities. The surveys must encompass all sagebrush shrublands within 0.5 mile of the proposed activities.
2. All stock tanks shall include a ramp to enable trapped small birds and mammals to escape. See Idaho BLM Technical Bulletin 89-4 entitled Wildlife Watering and Escape Ramps on Livestock Water Developments: Suggestions and Recommendations.

4.1.1.1. Threatened, Endangered, or Sensitive Species

4.1.1.1.1. Bald Eagle

1. Additional mitigation measures may be necessary if the site-specific project is determined by a BLM biologist to have adverse effects to bald eagles or their habitat.

4.1.2. Air Quality

1. During construction, emissions of particulate matter from well pad and resource road construction will be minimized by application of water, or other dust suppressants, with at least 50 percent control efficiency. Roads and well locations constructed on soils susceptible to wind erosion could be appropriately surfaced or otherwise stabilized to reduce the amount of fugitive dust generated by traffic or other activities, and dust inhibitors (surfacing materials, non-saline dust suppressants, and water) could be used as necessary on unpaved collector, local and resource roads that present a fugitive dust problem. The use of chemical dust suppressants on BLM surface will require prior approval from the BLM authorized officer.

4.1.3. Water Management

4.1.3.1. Surface Water

1. Channel Crossings:
 - a) Channel crossings by road and pipelines will be constructed perpendicular to flow. Culverts will be installed at appropriate locations for streams and channels crossed by roads as specified in the BLM Manual 9112-Bridges and Major Culverts and Manual 9113-Roads. Streams will be crossed perpendicular to flow, where possible, and all stream crossing structures will be designed to carry the 25-year discharge event or other capacities as directed by the BLM.
 - b) Channel crossings by pipelines will be constructed so that the pipe is buried at least four feet below the channel bottom.
2. Low water crossings will be constructed at original streambed elevation in a manner that will prevent any blockage or restriction of the existing channel. Material removed will be stockpiled for use in reclamation of the crossings.

4.2. Site Specific Conditions of Approval, Alternative C

4.2.1. Surface Use

1. 20 locations will have a 30 day stabilization COA and are described in detail within the Carr Draw Federal POD III West Reclamation Management Plan. In addition, 4 locations are not included within the Carr Draw Federal POD III West Reclamation Management Plan and are the 34-3BG/W, 11-10BG/W, 44-11BG/W, and the 12-27BG/W. The 30 day stabilization COA will apply to both the location and the access for these additional 4 locations. The summary below lists all 24 locations with the 30 day stabilization COA:

30 Day COA Stabilization COA:	Well #:
Applied to both the location and access	34-3BG/W, 14-9BG/LW, 21-10BG/W, 11-10BG/W,

30 Day COA Stabilization COA:	Well #:
	44-11BG/W, 22-11BG/W, 12-15BG/W, 42-23BG/W, 12-27BG/W, 33-27BG/W, 43-14BG/W, 14-10BG/W, 43-3BG/W
Applied to only the location	23-23BG/W, 43-27BG/W, 23-9BG/W
Applied to only the access	34-9BG/LW, 32-22BG/W, 31-22BG/W, 14-23BG/W, 22-23BG/W, 21-27BG/W, 11-14BG/W, 43-9BG/W

2. The following 3 locations will have utilities and or access coming from the Carr Draw IV POD to the South:

All gas and water will go to the south to the Carr IV POD. The access will be from the Carr Draw Federal POD III West.	33-27BG/W, 43-27BG/W
All gas and water will go to the south to the Carr IV POD. The access will be from the Carr Draw Federal POD IV.	12-27BG/W

3. The following 4 locations will utilize existing vegetation and topography to mitigate for the elk view shed:

Site Specific COA:	Well #:
The operator will utilize the mature trees surrounding the location as well as topographic features (i.e. hillside, ridges) to mitigate for the elk view shed.	32-3BG/W, 43-9BG/W, 42-10BG/W, 13-3BG/W

4. The following 3 locations will be dead end locations:

Site Specific COA:	Well #:
The access road will dead end at the location and needs to be signed accordingly.	14-10BG/W, 33-15BG/W, 12-15BG/W

5. The colors for the POD Infrastructure will be either Juniper Green or Covert Green and will be chosen on a site specific basis per location depending on the dominant vegetation. There are many areas within the project that are dominated by Juniper and other pine species, Juniper Green will be used in these areas. The areas that are dominated by sagebrush will be painted Covert Green:

Environmental Color:	Well #:
Covert Green (40 locations)	14-2BG*/W, 23-2BG/GW, 32-3BG/W, 23-3BG/W, 41-3BG/GW, 43-3BG/W, 14-9BG/LW, 34-9BG/LW, 23-9BG/LW, 43-9BG/W, 32-10BG/W, 11-10BG/W, 41-10BG/W, 11-14BG/W, 21-11BG/W, 43-11BG/W, 44-11BG/W, 22-11BG/W, 34-14BG/W, 31-14BG/W, 23-14BG/W, 14-15BG/W, 12-15BG/W, 33-15BG/W, 42-15BG/W, 41-15BG/W, 12-22BG/LW, 32-22BG/W, 31-22BG/W, 21-22BG/W, 14-23BG/W, 12-23BG/W, 21-23BG/W, 23-23BG/W, 42-23BG/W, 12-26BG/W, 12-27BG/W, 41-27BG/W, 21-27BG/W, 43-27BG/W
Juniper Green (12 locations)	12-3BG/W, 21-3BG/GW, 13-3BG/W, 34-3BG/W, 21-10BG/W, 14-10BG/W, 41-10BG/W, 34-11BG/W, 22-14BG/W, 43-14BG/W, 22-23BG/W, 33-27BG/W

-All other infrastructure such as POD buildings and meter buildings will be painted Covert Green.

6. 14-9BG/LW: The pad will be constructed to fit the topography and will not affect the tree to the east as well as the blowout adjacent to the tree to the west.
7. 42-23BG/W: The well location will be built to accommodate and avoid the tree to the east, the erosion feature to the south, and will maintain a 20' foot vegetated buffer from the draws to the west.

8. 34-3BG/W: The operator will maintain the integrity of the ridge on the south side of the location to create a natural buffer to mitigate for the elk view shed.
9. 12-15BG/W: Williams will use road base gravel instead of scoria for the access road to this well.
10. 32-22BG/W: The location will require less than two foot of fill on the south west side of the location. Where fill will be borrowed from the north end of the location, the natural buffer shall be left intact.
11. 14-10BG/W: The trees surrounding the pad will also be used to mitigate for the elk view shed and will also serve as a marker for the outer edge of disturbance. To accomplish this access road will come in from the NW off of the existing corridor, on a natural contour using the trees to mitigate for the elk view shed and will curve gently into the cut of the pad.
12. 31-22BG/W: Due to the proximity to a raptor nest, the access road width will be no greater than 12' feet wide on the ridge prior to descending into the well location, at this location the road will not cut into the base of the knoll adjacent to the originally proposed location. The road will need to be surfaced from the knoll to the well.
13. 22-23BG/W: The toe of the fill needs to be out of the drainage. A 20' foot vegetated buffer will apply to the location.
14. 23-23BG/W: The crushed scoria may enhance weed growth, therefore a plan addressing how weeds will be controlled and how the scoria will be re-contoured for final reclamation will be needed.
15. 23-23BG/W: The location will be used as a potential staging area for the wells to the north. The location will be built no larger than the original proposed 0.99 acres. The pad will incorporate the adjacent main corridor and will resemble an eyebrow location.
16. 14-10BG/W/12-15BG/W: The existing corridor from the 14-10 to the 12-15 location will not be used for travel but will be used for a utility corridor, and will be signed accordingly. No vehicle travel will be allowed on this corridor outside of the construction phase. However, upon an emergency (those necessary to protect health and safety) the operator will notify the BLM authorized officer. The operator will adhere to the Carr Draw Federal POD III West Reclamation Management Plan: Site Specific Reclamation Areas, Segment 23
17. The operator will be required to monitor and record the frequency of site visits to individual wells and facilities for the first six months of production immediately following construction of the wells and facilities. These reports will be submitted by the operator at the end of each month to the BLM BFO. The monthly reports will include: The reason for the well visit, any problems identified, any repairs or actions made during the well visits, the date, time, and duration of the well visit. Actions that are covered under 43 CFR 3162.3-2 (a) Subsequent well operations, as they will be submitted through sundry. At the end of the six month reporting period the operator will submit a travel plan based on the well reports to be approved by the BLM BFO.
18. The operator will seed the Carr Draw Federal POD III West with the seed mixes identified within the Carr Draw Federal POD III West Reclamation Management Plan. Seed Mix A, B, or C will be used depending on the site specific soil type, identified in attachment A and B within the Carr Draw Federal POD III West Reclamation Management Plan.

4.2.2. Wildlife

Big Game

1. No surface disturbing activity shall occur within identified elk crucial winter range from November 15 to April 30. This timing limitation will affect the following:

Township/Range	Section	Wells and Infrastructure
T50N/R76W	3	Well locations: 12-3-5076, 21-3-5076, 32-3-5076, and 41-3-5076 All associated infrastructure within the NW and NE of this section.
T50N/R76W	4	All associated infrastructure within the NE of this section.

2. No surface disturbing activity shall occur within identified elk calving range from May 1 to June 30. This timing limitation will affect the following:

Township/Range	Section	Wells and Infrastructure
T50N/ R76W	2	Well locations: 14-2-5076 and 23-2-5076 All associated infrastructure in the SW, SENW, and SWNW of this section.
T50N/R76W	3	Well locations: 12-3-5076, 13-3-5076, 21-3-5076, 23-3-5076, 32-3-5076, 34-3-5076, 41-3-5076, and 43-3-5076 All associated infrastructure within this ENTIRE section.
T50N/R76W	4	All associated infrastructure within this ENTIRE section.
T50N/R76W	9	Well Locations: 14-9-5076, 23-9-5076, 34-9-5076, and 43-9-5076 All associated infrastructure within this ENTIRE section.
T50N/R76W	10	Well Locations: 11-10-5076, 21-10-5076, 32-10-5076, 41-10-5076, and 42-10-5076 All associated infrastructure within this ENTIRE section.
T50N/R76W	11	Well Locations: 21-11-5076, 22-11-5076, 34-11-5076, 43-11-5076, and 44-11-5076 All associated infrastructure within this ENTIRE section.
T50N/R76W	14	Well Locations: 22-14-5076, 23-14-5076, and 31-14-5076 All associated infrastructure within the NW, NWNE, NENE, SWNE, NWSW, and NESW of this section.
T50N/R76W	15	Well Locations: 12-15-5076 and 33-15-5076, All associated infrastructure within the NW, NE, NWSE, and NESE of this section.

3. The operator will provide BLM with a proposed work schedule at the pre-construction meeting and a work summary report, due by the 12th of each month. The report shall summarize the work activities from the previous month, what activities were conducted, where the work was conducted, when the work was conducted, and any elk observations shall be recorded. The report shall also include the proposed activity schedule for the next month. The summary report shall be compared with the elk monitoring data to evaluate cause and affect relationships.

Raptors

The following conditions will alleviate impacts to raptors:

1. No surface disturbing activity shall occur within 0.5 mile of all identified raptor nests from February 1 through July 31, annually, prior to a raptor nest occupancy survey for the current breeding season. This timing limitation will affect the following:

TOWNSHIP/RANGE	SECTION	WELLS AND INFRASTRUCTURE
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TOWNSHIP/RANGE	SECTION	WELLS AND INFRASTRUCTURE
T50N/R76W	3	Well locations: 34-3-5076 All associated infrastructure in the SWSE and SESE of this section.
T50N/R76W	4	All associated infrastructure in the NWNE and SWNE of this section.
T50N/R76W	9	Well locations: 23-9-5076, 34-9-5076, and 43-9-5076 All associated infrastructure in the SE, SENW, SWNE, SENE, and NESW of this section.
T50N/R76W	10	Well locations: 21-10-5076, 32-10-5076, 41-10-5076, and 42-10-5076. All associated infrastructure in the NWSW, NENW, SENW, and NE of this section.
T50N/R76W	14	Well locations: 34-14-5076 All associated infrastructure in the SESE, SWSE, SWSW, and SESW of this section.
T50N/R76W	15	Well locations: 14-15-5076 and 33-15-5076 All associated infrastructure in the SE and SWSW of this section.
T50N/R76W	21	All associated infrastructure in the NENE and NWNE of this section.
T50N/R76W	22	Well locations: 12-22-5076, 21-22-5076, 32-22-5076, and 31-22-5076 All associated infrastructure in the NW, NE and NESW of this section.
T50N/R76W	23	Well locations: 12-23-5076, 22-23-5076, and 42-23-5076 All associated infrastructure in the NWNW, NWNE, NENE, SENE, SESW, SWSE, and SESE of this section
T50N/R76W	25	All associated infrastructure in the NENE of this section.
T50N/R76W	26	All associated infrastructure in the NENE, NWNE, and NENW of this section.
T50N/R75W	31	All associated infrastructure in the N ½ of this section.

- a. Surveys to document nest occupancy shall be conducted by a biologist following BLM protocol, between April 15 and June 30. All survey results shall be submitted in writing to a Buffalo BLM biologist and approved prior to surface disturbing activities. Surveys outside this window may not depict nesting activity. If a survey identifies active raptor nests, a 0.5 mile timing buffer will be implemented. The timing buffer restricts surface disturbing activities within 0.5 mile of occupied raptor nests from February 1 to July 31.
- b. Nest occupancy and productivity checks shall be completed for nests within a 0.5 mile of any surface disturbing activities (e.g., well drilling or pipeline installation) across the entire POD for as long as the POD is under construction. Once construction of the POD has ceased, nest occupancy and productivity checks shall continue for the first five years on all nests that are within a 0.5 mile of locations where any surface-disturbing activities took place. Productivity checks shall be completed only on those nests that were verified to be occupied during the initial occupancy check of that year. The productivity checks shall be conducted no earlier than June 1 or later than June 30, and any evidence of nesting success or production shall be

recorded. Survey results will be submitted to a Buffalo BLM biologist in writing no later than July 31 of each survey year. In 2009, this applies to the nest(s) listed in Table 3.9 of the EA and is subject to change each year after that, pending surveys.

2. If an undocumented raptor nest is located during project construction or operation, the Buffalo Field Office (307-684-1100) shall be notified within 24 hours.
3. Well metering, maintenance and other site visits within 0.5 miles of raptor nests should be minimized as much as possible during the breeding season (February 1 – July 31).

Sage Grouse

The following conditions will alleviate impacts to sage-grouse:

- a. No surface disturbing activities are permitted from March 1 to June 15. This condition will be implemented on an annual basis for the life of the project. This condition affects the following locations:

Township/Range	Section	Wells and Infrastructure
T50N/R76W	9	Well locations: 14-9-5076, 34-9-5076, 43-9-5076 All associated infrastructure within this ENTIRE section.
T50N/R76W	14	Well locations: 11-14-5076 All associated infrastructure in the NENE of this section.
T50N/R76W	15	Well locations: 41-15-5076 and 42-15-5076 All associated infrastructure in the NENE of this section.
T50N/R76W	22	Well locations: 31-22-5076 All associated infrastructure in the NENE of this section.
T50N/R76W	27	Well locations: 12-27-5076 and 21-27-5076 All associated infrastructure in the NENW, NWNW, and SWNW of this section.
T50N/R75W	31	All associated infrastructure within this ENTIRE section.
T50N/R76W	34	All associated infrastructure within this ENTIRE section.

- b. A sage-grouse survey will be conducted by a biologist following the most current WGFD protocol. All survey results shall be submitted in writing to a Buffalo BLM biologist and approved prior to surface disturbing activities.
- c. Maximum design speed on all operator-constructed and maintained roads (except county roads) will not exceed 25 miles per hour.
- d. Perch inhibitors will be installed on each pole of the proposed overhead power line along its entire route.

5. Alternative D

5.1. Description of the Alternative

Alternative D incorporates further refinements of Alternative C. The site-specific level modifications are all associated with wells and infrastructure proposed in sections 10, 14, and 15 in T50N R76W. These modifications are listed below:

The following wells have been deferred due to resource conflicts.

	Well Name	Well #	Qtr/Qtr	Section	TWP	RNG	Lease #
1	CARR DRAW III W CARU	14-10BG	SWSW	10	50N	76W	WYW154405
2	CARR DRAW III W CARU	14-10W	SWSW	10	50N	76W	WYW154405
3	CARR DRAW III W CARU	11-14BG	NWNW	14	50N	76W	WYW135623
4	CARR DRAW III W CARU	11-14W	NWNW	14	50N	76W	WYW135623

	Well Name	Well #	Qtr/Qtr	Section	TWP	RNG	Lease #
5	CARR DRAW III W CARU	41-15BG	NENE	15	50N	76W	WYW154405
6	CARR DRAW III W CARU	41-15W	NENE	15	50N	76W	WYW154405
7	CARR DRAW III W CARU	42-15BG	SENE	15	50N	76W	WYW154405
8	CARR DRAW III W CARU	42-15W	SENE	15	50N	76W	WYW154405

The following access road, infrastructure and associated facilities are not being approved as proposed.

	Infrastructure/facility	Qtr/Qtr	Section	TWP	RNG
1	Access road from the 43-9 to the proposed 14-10 well location	NESE	9	50N	76W
		SWSW	10		
2	Access road and pipeline corridor to the proposed 41-15 well location	NENE	15	50N	76W
3	Access road and pipeline corridor to the proposed 11-14 well location	SWNW & NWNW	14	50N	76W
4	Access road and pipeline corridor from the access to the 22-14 well location to the proposed 42-15 well location	SENE	15	50N	76W
		SWNW & SENW	14		

Alternatives to the different aspects of the proposed action are always considered and applied as pre-approval changes, site specific mitigation and/or Conditions of Approval (COAs), if they will alleviate or minimize environmental effects of the operator's proposal.

6. Description of Mitigation Measures (applied as Conditions of Approval):

All programmatic and site specific measures from Alternative C apply.

7. Alternatives considered but not analyzed in detail

BLM considered the alternative proposed by the operator as described in section 2. Changes as a result of the on-sites; however the changes proposed would not have mitigated the impacts to wildlife and therefore will not be analyzed further.

7.1. Summary of Alternatives

A summary of the infrastructure currently existing within the POD area (Alternative A), the infrastructure originally proposed by the operator (Alternative B), and the infrastructure within the BLM/operator modified proposals (Alternative C and Alternative D) are presented below.

Table 7.1 Summary of the Alternatives

Facility	Alternative A (No Action) Existing Number or Miles	Alternative B (Original Proposal) Proposed Number or Miles	Alternative C (Modified Proposed Action) Revised Number or Miles	Alternative D Revised Number or Miles
Total CBNG Wells:	0	109	104	76
Well Locations:	0	55	52	38
Non-constructed	0	38(3.8 acre ea.)	13(1.30 acres)	12(1.20 acre)
Constructed	0	17(8.33 acres)	24(22.72 acres)	16(15.08 acres)
Slotted	0	0(0.1 acre ea.)	15(1.50 acres)	10(1.00 acre)
Conventional Wells	5(5a)	0	0	0
Gather/Metering Facilities	0 (acres)	0 (acres)	5 (1in state sec.) (0.50 acres)	5 (1in state sec.) (0.50 acres)
Compressors	2 (6 acre) within approximately 1.25 miles and within approximately 3.5 miles from the POD boundary	0	0	0
Ancillary (Staging/Storage Areas)	0	4 (4.00 acres)	4 (1 will utilize existing disturbance) (2.76 acres)	3 (2.76 acres)
Template/Spot Upgrade Roads	1.96 mi	16.60 mi	18.05 mi	16.04 mi
No Corridor	0.00 mi	1.15 mi	0.62 mi	0.62 mi
With Corridor	1.96 mi	15.45 mi	17.43 mi	15.42 mi
Engineered Roads	2.96 mi	5.32 mi	1.34 mi	0.86 mi
No Corridor	2.96 mi	0.00 mi	0.42 mi	0.42 mi
With Corridor	0.00 mi	5.32 mi	0.92 mi	0.44 mi
Primitive Roads	0.52 mi	7.04 mi	4.09 mi	1.82 mi
No Corridor	0.52 mi	0.00 mi	0.00 mi	0.00 mi
With Corridor	0.00 mi	7.04 mi	4.15 mi	1.87 mi
Buried Utilities	5.35 mi	34.58 mi	23.68 mi	18.96 mi
No Corridor	3.39 mi	6.77 mi	1.07 mi	0.34 mi
With Corridor	1.96 mi	27.81 mi	22.61 mi	18.62 mi

Facility	Alternative A (No Action) Existing Number or Miles	Alternative B (Original Proposal) Proposed Number or Miles	Alternative C (Modified Proposed Action) Revised Number or Miles	Alternative D Revised Number or Miles
Power Drops	5 (0.50 acres)	10(1.0 acres)	9(0.56 acres) 5 within existing	9(0.56 acres) 5 within existing
Distribution Panels	0	0	7 (within existing)	6(within existing)
Buried Power	1.96 mi	27.81 mi	23.18 mi	18.44 mi
Buried electrical with Corridor	1.96 mi	27.81 mi	22.43 mi	18.44 mi
Buried electrical without Corridor	0.00 mi	0.00 mi	0.75 mi	0.00 mi
Proposed Overhead Power lines in long term	4.02 mi (14.61 acres)	7.47mi (27.16acres)	3.90 mi (14.16 acres)	3.90 mi (14.16 acres)
Monitor Wells	0	0	0	0
Subsurface Drip Irrigation	0	0	0	0
Treatment Facilities	0	0	0	0
Impoundments: On-channel Off-channel	0	0	0	0
Water Discharge Points	0	0	0	0
Channel Disturbance: Culverts	5(0.05a)	1(0.01a)	1(0.01a)	1(0.01a)
Low Water Crossings	8(0.04)	0	3 (0.01a)	3 (0.01a)
Impoundment Crossings	2	0	0	0
TOTAL ACRES DISTURBANCE	Approx. 86.36 acres	Approx. 247.45 acres	Approx. 218.42 acres	Approx. 141.90 acres

The changes to the proposed action (Alternative B) resulted in development of Alternatives C and D as preferred alternatives. The changes have reduced impacts to the environment which will result from this action.

APPENDIX B
Bureau of Land Management Wyoming Buffalo Field Office
Guidance for general management actions during BFO
Resource Management Plan Revision
as of August 13, 2008

Lands shown on the attached map in white will be subject to the existing decisions from the 1985 RMP (as amended) and the 2003 Environmental Impact Statement/Plan Amendment Record of Decision for the Powder River Basin. Areas that are shown in blue will be managed according to these same planning documents as well as the management actions listed below.

The additional management actions were designed in accordance with the 2003 Record of Decision which states, in part, "Land use plan monitoring will be conducted by BLM...Information gathered from this monitoring will guide mid-course corrections in adapting to the inevitable changes that will occur because of new information."

Fluid Minerals

- Processing of new proposals will be considered on a case-by-case basis.
- Efforts will be made to assure that the impacts of surface disturbing projects will be consistent with a well pad density of 640 acres.
- Lease suspension requests will be processed in accordance with current regulations and policy.

Solid Minerals

- Processing of new proposals will be considered on a case-by-case basis.
- Vegetation Management**
- Current and proposed pesticide use proposals for weed control will be reviewed on a case-by-case basis.
 - Consideration of new proposals for vegetation treatments other than weed control may be considered on a case-by-case basis.

Fire Suppression

- The national strategy for fire suppression in sage-grouse habitat will be applied.
- Renewed emphasis on integration of resource advisors in fire suppression efforts.

Recreation

- Renewals for existing permitted actions will be allowed.
- New proposals for permitted activities will be considered on a case-by-case basis.
- New proposals for recreational facilities will be considered on a case-by-case basis.

Wildlife

- Approved habitat improvements and maintenance of existing improvements will be allowed.
- New proposals for habitat improvement projects will be considered on a case by case basis.

Rangeland Management

- Grazing use will continue in accordance with the grazing regulations.
- New proposals for range improvements or treatments will be considered on a case-by-case basis.

Realty

- Processing of new applications will be considered on a case-by-case basis. Changes to existing Terms & Conditions will be considered on a case-by-case basis.

When considering these general management actions on a case-by-case basis consideration will be given to maintaining a viable population of sage-grouse and associated habitat needs. The proponent will be asked to demonstrate that the proposal can be managed in a manner that effectively conserves sage-grouse habitats affected by the proposal.

BLM will work with industry to include measurable conservation objectives for use in project planning. Resources such as, but not limited to, the Local Sage-Grouse Working Group Plan may be used to develop these objectives. Each proposal will be evaluated by BLM in coordination with the Wyoming Game & Fish Department to ensure that BLM maintains habitat connectivity by addressing habitat loss, degradation and fragmentation.

Criteria that will be used when reviewing proposed activities include, but are not limited to the following:

- Consolidation of infrastructure to lessen habitat fragmentation, degradation and loss.
- Effective conservation of sage-grouse seasonal habitats and habitat connectivity.
- Measurable conservation objectives.
- Consideration of measures contained in the Local Working Group Conservation Plan.

