

**DECISION RECORD
FOR
J.M. Huber Corporation
Westway Federal POD
ENVIRONMENTAL ASSESSMENT –WY-070-10-234**

DECISION:

BLM’s decision is to approve J.M. Huber Corporation’s Westway Federal Coal Bed Natural Gas (CBNG) POD Alternative C of the attached Environmental Assessment (EA). Alternative C is the Modified Proposed Action, and is the result of collaboration between the Bureau of Land Management and J.M. Huber Corporation. Alternative C has been analyzed in the attached EA and found to have no significant impacts on the human environment, beyond those described in the Powder River Basin Final Environmental Impact Statement (PRB FEIS) thus an EIS is not required.

Details of the approval are summarized below. The project description, including specific changes made at the onsites, and site-specific mitigation measures, is included in the attached EA, pp. 1-13.

Well Sites:

The following 13 Applications for Permit to Drill (APDs) and associated infrastructure are authorized:

	Well Name	Well #	QTR	Sec	TWP	RNG	Lease #
1	GIBBS FEDERAL	03-07	NENW	7	55	76	WYW161435
2	GIBBS FEDERAL	01-01	NENE	1	55	77	WYW146329
3	ODEGARD FEDERAL	13-01	SWSW	1	55	77	WYW146329
4	ODEGARD FEDERAL	09-11	NESE	11	55	77	WYW146329
5	ODEGARD FEDERAL	15-11	SWSE	11	55	77	WYW146329
6	ODEGARD FEDERAL	01-12	NENE	12	55	77	WYW146329
7	ODEGARD FEDERAL	03-12	NENW	12	55	77	WYW146329
8	ODEGARD FEDERAL	05-12	SWNW	12	55	77	WYW146329
9	ODEGARD FEDERAL	07-12	SWNE	12	55	77	WYW146329
10	ODEGARD FEDERAL	09-12	NESE	12	55	77	WYW146329
11	ODEGARD FEDERAL	11-12	NESW	12	55	77	WYW146329
12	ODEGARD FEDERAL	13-12	SWSW	12	55	77	WYW146329
13	FEDERAL	15-12	SWSE	12	55	77	WYW146329

Water Management:

The following water management infrastructure was inspected and approved for use in association with this POD:

	FACILITY Name / Number	QQ	SEC	TWP	RNG	Capacity (Acre Feet)	Surface Disturbance (Acres)	Lease #
1	***Enl. Duane (7149S)	SWNE	11	55	77	21.78	2.50	WYW146329
2	**Odegard 1-11-55-77	NENE	1	55	77	20.48	2.13	FEE
3	**Odegard 6-12-55-77	SENE	12	55	77	19.6	2.30	WYW146329
4	**Odegard 7-11-55-77	NWNE	11	55	77	11.92	2.10	FEE
5	**Odegard 9-11-55-77	NESE	11	55	77	20.12	2.10	WYW146329

**Direct discharge point into reservoir via outfall.

***Indirect discharge via overflow from the Odegard 9-11-55-77 Reservoir. Enl. Duane (7149S) was previously named Odegard 11-11-55-77.

Produced water from the Westway Federal POD will be discharged into any of the five (5) proposed stock reservoirs shown in the table above through four (4) proposed outfall locations. In addition, J.M. Huber plans to discharge water through a proposed direct discharge point into the Powder River, utilizing the assimilative capacity credits program.

Deferrals:

The following 4 APDs and associated infrastructure are deferred until the identified deficiencies are satisfactorily addressed:

	Well Name	Well #	Environmental Issue/Deficiency	Remedy
1	GIBBS FEDERAL	05-01	The well is located within line of sight of the raptor nest (GOEA #3631).	Site will be re-evaluated for an alternate location after the July 31 st Timing Lease Stipulation.
2	GIBBS FEDERAL	07-01	The well is located within line of sight of the raptor nest (GOEA #3631).	Site will be re-evaluated for an alternate location after the July 31 st Timing Lease Stipulation.
3	GIBBS FEDERAL	11-01	The well is located within line of sight of the raptor nest (GOEA #3631).	Site will be re-evaluated for an alternate location after the July 31 st Timing Lease Stipulation.
4	GIBBS FEDERAL	03-01	Due to the proximity with (GOEA #3631) raptor nest, the USFWS recommends moving the well more than .5 miles from the nest.	Site will be re-evaluated for an alternate location after the July 31 st Timing Lease Stipulation.

The following 2 Reservoirs will be deferred until the identified deficiencies are satisfactorily addressed:

	FACILITY Name / Number	QQ	SEC	TWP	RNG	Lease #	Remedy
1	Enl. Duane (7149S)	SWNE	11	55	77	WYW146329	Submit the proper bond amount prior to discharging CBNG water.
2	Odegard 9-11-55-77	NESE	11	55	77	WYW146329	Submit the proper bond amount prior to discharging CBNG water.

Operator Committed Measures:

The operator has incorporated several measures to alleviate resource impacts into their Master Surface Use Plan (MSUP), submitted on June 29, 2009, revised April 27, 2010. Refer to the MSUP Table of Contents; i-ii, for complete details of operator committed measures.

Site-Specific Mitigation Measures:

Site-specific Conditions of Approval have been applied to this project, in addition to the programmatic and standard COAs identified in the PRB FEIS, to mitigate the site-specific impacts described in the Environmental Consequences section of the attached EA. For a complete description of all site-specific COA's associated with this approval, see section 2.2.2 in the attached EA.

COMPLIANCE WITH LAWS, REGULATIONS, LAND USE PLANS, AND POLICIES:

This approval is in compliance with all Federal laws, regulations, and policies. This includes, but is not limited to, the Federal Land Policy and Management Act, the National Historic Preservation Act, the Threatened and Endangered Species Act, the Migratory Bird Treaty Act, the Clean Water Act, the Clean Air Act, and the National Environmental Policy Act.

Approval of this alternative is in conformance with the *Powder River Basin Oil and Gas Project Environmental Impact Statement and Proposed Plan Amendment (PRB FEIS)*, *Record of Decision and Resource Management Plan Amendments for the Powder River Basin Oil and Gas Project (PRB FEIS ROD)*, and the Approved Resource Management Plan (RMP) for the Public Lands Administered by the Bureau of Land Management, Buffalo Field Office (BFO), (1985/2001).

This approval is subject to adherence with all of the operating plans, design features, 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.

RATIONALE:

The decision to authorize the selected alternative, as summarized above, 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 certified that a Surface Use Agreement has been reached with the Landowners.
3. The selected alternative will not result in any undue or unnecessary environmental degradation.
4. It is in the public interest to approve these wells, as this development will help meet the nation's energy needs, and will help to stimulate local economies by maintaining workforce stability.
5. The selected alternative incorporates appropriate local greater sage-grouse research and the best available science from across the species' range in development of the attached conditions of approval.
6. Mitigation measures were selected to alleviate environmental impacts and meet the project's purpose and need. Mitigation is discussed in the environmental consequences section of the attached EA. For a complete description of all site-specific COA's associated with this approval, see section 2.2.2 in the attached EA.

7. The selected alternative incorporates components of the Wyoming Governor's Sage Grouse Implementation Team's "core population area" strategy, the Governor's executive order, and local research to provide mitigation for sage-grouse, while meeting the purpose and need for the **Westway Federal POD** Project.

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: *Diane W. Sp...* Date: 7/30/10

**FINDING OF NO SIGNIFICANT IMPACT
FOR
J.M. Huber Corporation
Westway Federal POD
ENVIRONMENTAL ASSESSMENT –WY-070-10-234**

FINDING OF NO SIGNIFICANT IMPACT:

On the basis of the information contained in the EA, and all other information available to me, it is my determination that: (1) the implementation of Alternative C will not have significant environmental impacts beyond those already addressed in PRB EIS to which the EA is tiered; (2) Alternative C is in conformance with the Buffalo Field Office Resource Management Plan (1985, 2001); and (3) Alternative C does not constitute a major federal action having a significant effect on the human environment. Therefore, an environmental impact statement or a supplement to the existing environmental impact statement is not necessary and will not be prepared.

This finding is based on my consideration of the Council on Environmental Quality's (CEQ) criteria for significance (40 CFR '1508.27), both with regard to the context and to the intensity of the impacts described in the EA.

CONTEXT:

Mineral development (coal, oil and gas, bentonite, and uranium) is a long-standing and common land use within the Powder River Basin. More than one fourth of the nation's coal production comes from the Powder River Basin. The PRB FEIS reasonably foreseeable development predicted and analyzed the development of 51,000 CBNG wells and 3,200 oil wells. The additional CBNG development described in Alternative B is insignificant within the national, regional, and local context.

INTENSITY:

The implementation of Alternative C will result in beneficial effects in the forms of energy and revenue production however; there will also be adverse effects to the environment. Design features and mitigation measures have been included within Alternative C to prevent significant adverse environmental effects.

The preferred alternative does not pose a significant risk to public health and safety. The geographic area of the POD does not contain unique characteristics identified within the 1985 RMP, 2003 PRB FEIS, or other legislative or regulatory processes.

Relevant scientific literature and professional expertise were used in preparing the EA. The scientific community is reasonably consistent with their conclusions on environmental effects relative to oil and gas development. Research findings on the nature of the environmental effects are not highly controversial, highly uncertain, or involve unique or unknown risks.

CBNG development of the nature proposed with this POD and similar PODs was predicted and analyzed in the PRB FEIS; the selected alternative does not establish a precedent for future actions with significant effects.

There are no cultural or historical resources present that will be adversely affected by the selected alternative. No species listed under the Endangered Species Act or their designated critical habitat will be adversely affected. The selected alternative will not have any anticipated effects that would threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

Field Manager:  Date: 7/30/10

**BUREAU OF LAND MANAGEMENT
BUFFALO FIELD OFFICE
ENVIRONMENTAL ASSESSMENT (EA)
FOR
J.M. Huber Corporation
Westway Federal POD
PLAN OF DEVELOPMENT
WY-070-10-234**

1. INTRODUCTION

This site-specific analysis tiers into and incorporates by reference the information and analysis contained in the Powder River Basin Oil and Gas Project Environmental Impact Statement and Resource Management Plan Amendment (PRB FEIS), #WY-070-02-065 (approved April 30, 2003), pursuant to 40 CFR 1508.28 and 1502.21. This document is available for review at the BLM Buffalo Field Office (BFO). This project environmental assessment (EA) addresses site-specific resources and impacts that were not covered within the PRB FEIS.

1.1. Background

J.M. Huber Corporation submitted the Westway Federal POD on July 1, 2009 with 17 Federal APD's.

Onsite visits were conducted in 2010 on April 9th and April 15th to evaluate the proposal and modify as necessary to alleviate environmental impacts. BLM sent a post-onsite deficiency on May 5th, 2010. On May 28th, 2010 BLM-BFO received from the U.S. Fish and Wildlife Service written recommendations for protecting an active golden eagle (*Aquila chrysaetos*) nest (#3631) located within the proposed Westway Federal POD. Due to proximity of the golden eagle nest, 4 of the APD's will be deferred until after the July 31st timing stipulations, at which time alternate locations will be determined. The project proposal and APDs were considered complete when BLM received the operator's response to the post onsite deficiencies on June 9th, 2010.

1.2. Purpose and Need for the Proposed Action

The purpose of the proposed action is to explore, develop and produce oil and gas reserves conducted under the rights granted by a Federal oil and gas lease, as required in 43 CFR 3160, all Onshore Orders, and The Mineral Leasing Act, as amended and supplemented, (30 U.S.C. 181 et seq.).

The need for the action is the requirement to obtain approval for the development of an Oil and Gas Lease through an Application for Permit to Drill (APD) on public lands managed by the Bureau of Land Management under Onshore Order No. 1, pursuant to the authority of the Mineral Leasing Act, as amended and supplemented, (30 U.S.C. 181 et seq.) and prescribed in 43 CFR Part 3160.

Decision to be Made: The BLM will decide whether or not to approve the proposed development of oil and gas resources on the federal leasehold, and if so, under what terms and conditions.

1.3. 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 2003 PRB FEIS.

1.4. Issues:

This EA addresses resources and resource uses with site-specific impacts that were not disclosed within the PRB FEIS. The interdisciplinary team in addition with Appendix A identifies resources and land uses

potentially present and affected by the proposed action; those resources and land uses that are either not present, not affected, or were adequately covered by the PRB FEIS will not be discussed in this EA. Issues for this project include raptor nest disturbance, bald eagle winter roost disturbance, cultural resources, soils, vegetation, water management, invasive species, minerals, and local economics.

2. ALTERNATIVES INCLUDING THE PROPOSED ACTION

Three alternatives, A, B and C were evaluated. A brief description of each alternative follows.

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 Operator Proposed Action

Alternative B contains complete APDs and based on the operator and BLM working to reduce environmental impacts. This alternative summarizes the POD as it was finally, after site visits, submitted to the BLM by J.M. Huber Corporation on May 7, 2010.

Proposed Action Title/Type: J.M. Huber Corporation’s Westway Federal POD Plan of Development (POD) for 17 coal bed natural gas well APD’s and associated infrastructure.

Proposed Well Information: There are 17 wells proposed within this POD; the wells are vertical bores proposed on an 80 acre spacing pattern with 1 well per location. Each well will be co-mingled and if available and economical produce from the Anderson, Upper Canyon, Upper Pawnee, Wall and Upper and Lower Cook coal seams. Proposed well house dimensions are approximately 6 ft wide x 7 ft length x 6 ft height Proposed wells are located as follows:

	Well Name	Well #	QTR	Sec	TWP	RNG	Lease #
1	WESTWAY GIBBS	03-07	NENW	7	55N	76W	WYW161435
2	WESTWAY GIBBS	01-01	NENE	1	55N	77W	WYW146329
3	WESTWAY GIBBS	03-01	NENW	1	55N	77W	WYW146329
4	WESTWAY GIBBS	05-01	SWNW	1	55N	77W	WYW146329
5	WESTWAY GIBBS	07-01	SWNE	1	55N	77W	WYW146329
6	WESTWAY GIBBS	11-01	NESW	1	55N	77W	WYW146329
7	WESTWAY ODEGARD	13-01	SWSW	1	55N	77W	WYW146329
8	WESTWAY ODEGARD	09-11	NESE	11	55N	77W	WYW146329
9	WESTWAY ODEGARD	15-11	SWSE	11	55N	77W	WYW146329
10	WESTWAY ODEGARD	01-12	NENE	12	55N	77W	WYW146329
11	WESTWAY ODEGARD	03-12	NENW	12	55N	77W	WYW146329
12	WESTWAY ODEGARD	05-12	SWNW	12	55N	77W	WYW146329
13	WESTWAY ODEGARD	07-12	SWNE	12	55N	77W	WYW146329
14	WESTWAY ODEGARD	09-12	NESE	12	55N	77W	WYW146329
15	WESTWAY ODEGARD	11-12	NESW	12	55N	77W	WYW146329
16	WESTWAY ODEGARD	13-12	SWSW	12	55N	77W	WYW146329
17	WESTWAY ODEGARD	15-12	SWSE	12	55N	77W	WYW146329

Water Management Proposal: The following water management infrastructure was proposed for use in association with this POD.

	FACILITY Name / Number	QQ	SEC	TWP	RNG	Capacity (Acre Feet)	Surface Disturbance (Acres)	Lease #
1	***Enl. Duane (7149S)	SWNE	11	55	77	21.78	2.50	WYW146329
2	**Odegard 1-11-55-77	NENE	1	55	77	20.48	2.13	FEE
3	**Odegard 6-12-55-77	SENE	12	55	77	19.6	2.30	WYW146329
4	**Odegard 7-11-55-77	NWNE	11	55	77	11.92	2.10	FEE
5	**Odegard 9-11-55-77	NESE	11	55	77	20.12	2.10	WYW146329

**Direct discharge point into reservoir via outfall.

***Indirect discharge via overflow from the Odegard 9-11-55-77 Reservoir. Enl. Duane (7149S) was previously named Odegard 11-11-55-77.

County: Sheridan, WY

Applicant: J.M. Huber Corporation

Surface Owners: Odegard Land, LLC, Gibbs Brothers, Inc, Anthony Green, PK Ranch LLC, Bureau of Land Management

Project Description:

The proposed action involves the following:

- Drilling of 17 total federal CBM wells in Anderson, Upper Canyon, Upper Pawnee, Wall and Upper and Lower Cook coal zones to depths of approximately 1,191 to 1,551 feet. Multiple seams will be produced by co-mingling production (a single well per location capable of producing from multiple coal seams).
- 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.
- No central gathering/metering buildings are proposed for this POD. Gas will be collected and metered at the wellhead. Telemetry will be used on all the wells and site visits vary depending on the well, averaging 8-12 visits per month.
- A Water Management Plan (WMP) that involves the following infrastructure and strategy: Five (5) proposed stock reservoirs receiving produced water through four (4) proposed discharge points for full containment. In addition, produced water will also be discharged through one (1) proposed direct discharge point into the Powder River, utilizing the assimilative capacity credits program.
- An unimproved and improved road network.
- An above ground power line network to be constructed by a third party contractor. 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. If the power line network is not completed before the wells are in production, then temporary diesel generators shall be placed at the 6 power drops.

- A fuel tank of 350-750 gallon capacity shall be located with each diesel generator. Generators are projected to be in operation until installation of overhead power has been completed. Fuel deliveries are anticipated to be once per week. Noise level is expected to be 80 decibels in the immediate area around the generators to less than 50 decibels at ¼ mile.
- A buried gas, water and power line network, no central gathering/metering facilities and no new compression facilities.
- Five temporary staging areas, 100 ft. x 400 ft. (0.92 acres each), will be used to store and assemble construction materials, and to store construction equipment.

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.

2.2.1. Operator Committed Measures

The operator has incorporated several measures to alleviate resource impacts into the Master Surface Use Plan (MSUP), submitted on June 29, 2009, revised April 27, 2010. Refer to the MSUP Table of Contents; i-ii, for complete details of operator committed measures.

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 0.5 mile of a federal CBNG producing well in the POD
4. Provide water analysis from a designated reference well in each coal zone.
5. The Operator has certified that a Surface Use Agreement has been reached with the landowners.

2.2.2. Site-Specific Conditions of Approval

In addition to the operator committed measures, the BLM is including the following site-specific COAs to alleviate environmental impacts:

2.2.2.1. Surface Use

The following site specific concerns were identified at the well locations:

1. Gibbs 03-07-55-77: The pit will be lined, due to proximity to the drainage to the southwest.
2. Gibbs 01-01-55-77: 30-day stabilization required on the access road to this well due to highly erosive soil conditions. Be aware of the side drainages during construction of the access road. The pit will be lined due to the erosive soils at the location.
3. Gibbs 03-01-55-77: This well is deferred due to the proximity with the raptor nest (GOEA #3631) and will be re-evaluated for an alternate location after the July 31st Timing Lease Stipulation (TLS).

4. Gibbs 05-01-55-77: This well is deferred due to the proximity with the raptor nest (GOEA #3631) and will be re-evaluated for an alternate location after the July 31st Timing Lease Stipulation (TLS).
5. Gibbs 07-01-55-77: This well is deferred due to the proximity with the raptor nest (GOEA #3631) and will be re-evaluated for an alternate location after the July 31st Timing Lease Stipulation (TLS).
6. Gibbs 11-01-55-77: This well is deferred due to the proximity with the raptor nest (GOEA #3631) and will be re-evaluated for an alternate location after the July 31st Timing Lease Stipulation (TLS).
7. Odegard 13-01-55-77: Maintain a 20 foot undisturbed vegetative buffer from the headcut located on the west side of the well pad.
8. Odegard 09-11-55-77: Maintain a 20 foot undisturbed vegetative buffer from the headcut located on the west side of the location. Due to the side slope of the location, be sure to address positive drainage off the pad when designing the location. Access to this well may change if the WDEQ denies the Odegard 7-11-55-77 reservoir and should be updated with the new plans submitted to the BLM as soon as possible.
9. Odegard 05-12-55-77: Keep water off the pad by utilizing erosion control measures to ensure diverting water from the uphill side of the pad. Use appropriate surface material on access road to this location due to 8% grade to well location.
10. Odegard 07-12-55-77: The pit will be lined due to erosive soils at the location.
11. Odegard 09-12-55-77: Erosion control measures to alleviate drainage off the location and stabilize erosive soil conditions will apply to the well location. Maintain a 20 foot undisturbed vegetative buffer from the drainage channel.
12. Odegard 11-12-55-77: 30 day stabilization measures will apply to the location due to erosive soils. Erosion control measures apply to the location, avoid losing spoils down the east edge of the ridge and move the access into the pad on the west side of the juniper tree to avoid disturbing the existing tree. The pit will be lined due to the proximity of the location on the ridge and erosive soils found at the location.
13. Odegard 13-12-55-77: Erosion control measures apply to stabilize erosive soil conditions at the location. The Operator moved the access route to the north to avoid excessive disturbance and shorten the route. The pit will be lined due to erosive soils.
14. Federal 15-12-55-77: 30 day stabilization measures will apply to the pad due to erosive soils. Erosion control measures apply to the location. The pit will be lined due to the proximity to the drainage and the erosive soil conditions.
15. Covert Green will be implemented as the color scheme for the entire POD; this is attributed to the fact that covert green is best suited to match the vegetation within the POD.
16. Headcut #1 in the NENE of S1, T55N R77W, below the proposed 1-11-55-77 Stock Reservoir, will be repaired during the construction of the reservoir. If the reservoir is not constructed, monitoring of the headcut will be conducted to ensure that the current access road will not be affected.
17. The Enl. Duane (7149S) Stock Reservoir will be deferred from use until the Operator submits the appropriate bond amount.
18. The Odegard 9-11-55-77 Stock Reservoir will be deferred from use until the Operator submits the appropriate bond amount.
19. The operator will seed on the contour to a depth of no more than 0.5 inch. To maintain quality and purity, certified seed with a minimum germination rate of 80% and a minimum purity of 90% will be used. On BLM surface or in lieu of a different specific mix desired by the surface owner, use the following:

10-14" Precipitation Zone

Shallow Loamy Ecological Site Seed Mix		
Species	% in Mix	Lbs PLS*
<i>Thickspike Wheatgrass</i> (Elymus lanceolatus ssp. lanceolatus)	50	6.0
<i>Bluebunch wheatgrass</i> (Pseudoroegneria spicata ssp. Spicata)	35	4.2
<i>Prairie coneflower</i> (Ratibida columnifera)	5	0.6
<i>White or purple prairie clover</i> (Dalea candidum, purpureum)	5	0.6
<i>Rocky Mountain beeplant</i> (Cleome serrulata)	5	0.6
Chapter 2 Totals	100%	12 lbs/acre

Loamy Ecological Site Seed Mix		
Species	% in Mix	Lbs PLS*
<i>Western Wheatgrass</i> (Pascopyrum smithii)/or <i>Thickspike Wheatgrass</i> (Elymus lanceolatus ssp. lanceolatus)	30	3.6
<i>Bluebunch Wheatgrass</i> (Pseudoroegneria spicata ssp. Spicata)	10	1.2
<i>Green needlegrass</i> (Nassella viridula)	25	3.0
<i>Slender Wheatgrass</i> (Elymus trachycaulus ssp. trachycaulus)	20	2.4
<i>Prairie coneflower</i> (Ratibida columnifera)	5	0.6
<i>White or purple prairie clover</i> (Dalea candidum, purpureum)	5	0.6
<i>Rocky Mountain beeplant</i> (Cleome serrulata)	5	0.6
Chapter 3 Totals	100%	12 lbs/acre

*PLS = pure live seed

*Northern Plains adapted species

*Double this rate if broadcast seeding

This is a recommended seed mix based on the native plant species listed in the NRCS Ecological Site descriptions, U.W. College of Ag., and seed market availability. A site-specific inventory will allow the resource specialist to suggest the most appropriate species, percent composition, and seeding rate for reclamation purposes.

2.2.3. Wildlife

2.2.3.1. Bald Eagle

No surface disturbance shall occur within one mile of The Powder River from November 1 through April 1, annually, prior to a winter roost survey. The survey results must be submitted in writing to the BFO and approved prior to initiation of surface disturbing activities.

2.2.3.2. 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
T55N, R77W	1	Well 1-1 and access/utilities corridor
	11	Wells 1-11, 9-11, their access/utilities corridors, the 7-11, 9-11, and 11-11, reservoirs
	12	Wells 3-12, 5-12, 7-12, 9-11, 11-12, their access/utilities corridors, overhead power, and the 5-12 and 6-12 reservoir.
	13	Access/utility corridor and overhead power.

- 2. Surveys for new raptor nests shall be conducted, annually, within 0.5 miles of the POD boundary on or after 15 April, and prior to or during the first nest occupancy check. A seasonal timing restriction (February 1 through July 31) will be added to surface disturbing activities within 0.5 miles of any new nests discovered.
- 3. Nest occupancy checks shall be completed for all raptor nests identified within a 0.5 mile of any infrastructure associated with the POD for as long as the POD is under construction. Once construction of the POD has ceased, nest occupancy checks shall continue for the first five years on all identified nests within a 0.5 mile of the POD boundary. Survey results will be submitted to a Buffalo BLM biologist in writing no later than 31 July of each survey year.
- 4. 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.

2.2.4. Water Management

- 1. An impoundment will be considered non-compliant if the proposed use is not met, ie. leaking if permitted for full containment. Water produced in association with Federal minerals cannot be discharged into non-compliant impoundments.
- 2. Channel crossings must be stabilized and re-seeded immediately after construction is completed.
- 3. Channel crossings will be constructed perpendicular to flow and buried at least four feet below the channel bottom.
- 4. Impoundments constructed over Federal minerals or on Federal surface to manage CBNG-produced water must be reclaimed when the production phase concludes. In order to establish soil chemistry goals for reclamation, baseline soil samples will be collected from the impoundments listed below. This baseline analysis will characterize existing soil chemistry and set reclamation target ranges. If the operator does not establish baseline parameters prior to impoundment construction, they would be required to do so at the time of reclamation by sampling locations upstream of the facility.

	Impoundment Name	Qtr/Qtr	Section	Township	Range	Capacity (Acre Feet)	Surface Disturbance (Acres)	Lease Number
1	Enl. Duane (7149S)	SWNE	11	55	77	21.78	2.50	WYW146329
2	Odegard 6-12-55-77	SENE	12	55	77	19.6	2.30	WYW146329
3	Odegard 9-11-55-77	NESE	11	55	77	20.12	2.10	WYW146329

Samples will be taken from the approximate proposed deepest point in the pool area prior to any construction. The recommended location is 10 feet upstream of the proposed low level outlet within the reservoir pool. Discrete samples will be taken from 0-6 inches, 6 to 24 inches and 24 to 48 inches for analysis for the following parameters:

- Texture
- pH
- EC
- Soluble Ca
- Soluble Mg
- Soluble Na
- Soluble K
- SAR
- Total Organic Carbon (TOC)
- Total metals including:
 - Al
 - Ba
 - B
 - Cd
 - Cu
 - Fe
 - Mn
 - Mo
 - Ra-226
 - Se
 - Zn

Standard soil sampling protocol will be used. Two copies of the analysis results will be sent to the BLM BFO Authorized Officer.

After the construction of the impoundment, an additional surface sample will be taken from 0 to 6 inches at the lowest point in the pool area and analyzed for the same parameters, with two copies of the analysis results sent to the BLM BFO Authorized Officer.

2.2.5. Cultural

All surface disturbing activity in the following areas will be monitored by a BLM cultural resource use permit (CRUP) holder or permitted crew chief. The Bureau has identified these areas as having a high potential for buried cultural deposits (areas containing alluvial deposits along the Powder River). Some portions of the monitoring areas as described may lie outside alluvial deposits and exact monitoring areas are left to the discretion of the archeological monitor. All monitored areas must be plotted on the map provided with the monitoring report. The submission of two copies of a monitoring report to BFO is required within 30 days of the completion of all monitoring work.

1. All surface disturbing activity associated with the construction of the utility corridor between the Odegard FED 15-11 55-77 well and the point where the utility corridor ties into the existing improved road in T55N R77W Section 11 SW/SW/NE.
2. All surface disturbing activity associated with the construction of the Gibbs FED 05-01 55-77 well and the associated utility corridor from Gibbs FED 05-01 55-77 well to the proposed electrical meter drop located in T55N R77W Section 1 SE/NW/NW.

All surface disturbing activity in the following areas will be monitored by BLM cultural resource use permit (CRUP) holder or permitted crew chief. These areas were identified as having poor surface visibility during the class III inventory by ACR Consultants, Inc. and BLM archeologist Ardeth Hahn. The submission of two copies of a monitoring report to BFO is required within 30 days of the completion of all monitoring work.

1. All surface disturbing activity associated with the construction of the Odegard FED 13-01 55-77 well and the associated utility corridor to where it ties into the Odegard FED 03-12 55-77 well.
2. All surface disturbing activity associated with the construction of the Odegard FED 03-12 55-77 well and the associated utility corridor from the Odegard FED 03-12 55-77 well to where it ties into the Odegard FED 07-12 55-77 well pad.

2.2.6. 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.

2.2.6.1. Soils

1. The Companies, will test sediments deposited in impoundments before reclaiming the impoundments. Tests will include the standard suite of cations, ions, and nutrients that will be monitored in surface water testing and any trace metals found in the CBNG discharges at concentrations exceeding detectable limits.

2.2.6.2. Wildlife

1. The Companies will construct power lines to minimize the potential for raptor collisions with the lines. Potential modifications include burying the lines, avoiding areas of high avian use (for example, wetlands, prairie dog towns, and grouse leks), and increasing the visibility of the individual conductors.

2.2.6.2.1. Threatened, Endangered, or Sensitive Species

The companies will conduct clearance surveys for threatened, endangered or other special-concern species at the optimum time. Inventory for special concern species, other than federally listed species below, is contingent upon landowner concurrence. This will require coordination with the BLM before November 1 annually to review the potential for disturbance and to agree on inventory parameters.

2.2.6.2.1.1. Bald Eagle

1. In the event that a bald eagle (dead or injured) is located during construction or operation, the USFWS' Wyoming Field Office (307-772-2374) and the USFWS' Law Enforcement Office (307-261-6365) will be notified within 24 hours.

2. All power lines will be built to protect raptors, including wintering bald eagles, from accidental electrocution using methods detailed by the Avian Power Line Interaction Committee (1996).
3. Surveys for active bald eagle nests and winter roost sites will be conducted within suitable habitat by a BLM approved biologist. Surface disturbing activities will not be permitted within one mile of suitable habitat prior to survey completion.
4. A seasonal minimum disturbance-free buffer zone of 1 mile will be established for all bald eagle winter roost sites (November 1 – April 1). These buffer zones and timing may be adjusted based on site-specific information through coordination with, and written approval from, the USFWS.

2.2.6.2.1.2. Ute Ladies'-tresses Orchid

1. Site-specific project areas will be evaluated for suitable Ute ladies'-tresses orchid habitat prior to permit approval. Suitable habitat is characterized by moist soils near springs, lakes, or perennial streams; most occurrences are in alluvial substrates along riparian edges, gravel bars, old oxbows, and moist to wet meadows in the floodplains of perennial streams (USFWS 1995).
2. Moist soils near wetlands, streams, lakes, or springs in the project area will be promptly revegetated if construction activities impact the vegetation in these areas. Revegetation will be designed to avoid the establishment of noxious weeds.

2.2.6.3. Transportation

1. The companies will provide georeferenced spatial data depicting as-built locations of all facilities, wells, roads, pipelines, power lines, reservoirs, discharge points, and other related facilities to the BLM upon completion of POD construction and development.
2. Companies will contact the counties to pursue development of maintenance agreements to ensure county roads are adequately maintained for the projected increase in use.

2.2.6.4. Noise

1. Where noise impacts to existing sensitive receptors are an issue, noise levels will be required to be no greater than 55 decibels measured at a distance of one-quarter mile from the appropriate booster (field) compressor. When background noise exceeds 55dBA, noise levels will be no greater than 5dBA above background. This may require the installation of electrical compressor motors at these locations.

2.2.6.5. Air Quality

A number of mitigation options for CBM are part of WDEQ's normal regulatory procedure. For instance, in the permitting of compressors, the agency always requires the application of BACT. The theory here is simply that given the air resource available, within technological and financial feasibility, the number of operations that can be allowed is maximized.

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.

2.2.6.6. Geology

Inadvertent release to the atmosphere of the methane resource will be controlled through WOGCC requirements and APD conditions of approval that address well control, casing, ventilations, and plugging procedures appropriate to site-specific CBM development plans.

2.3. Alternative C – Modified Action

Alternative C represents a modification of Alternative B based on BLM changing design features and developing mitigation measures to reduce environmental effects that the operator chose not to include in their project proposal. The description of Alternative C is the same as Alternative B, with the addition of the following project modifications.

BLM recommended that the following four (4) APDs and/or associated infrastructure be deferred until the identified deficiencies are satisfactorily addressed:

	Well Name	Well #	Environmental Issue/Deficiency	Remedy
1	GIBBS FEDERAL	05-01	The well is located within line of sight of the raptor nest (GOEA #3631).	Site will be re-evaluated for an alternate location after the July 31 st Timing Lease Stipulation.
2	GIBBS FEDERAL	07-01	The well is located within line of sight of the raptor nest (GOEA #3631).	Site will be re-evaluated for an alternate location after the July 31 st Timing Lease Stipulation.
3	GIBBS FEDERAL	11-01	The well is located within line of sight of the raptor nest (GOEA #3631).	Site will be re-evaluated for an alternate location after the July 31 st Timing Lease Stipulation.
4	GIBBS FEDERAL	03-01	Due to the proximity with (GOEA #3631) raptor nest, the USFWS recommends moving the well more than .5 miles from the nest.	Site will be re-evaluated for an alternate location after the July 31 st Timing Lease Stipulation.

2.4. Alternatives considered but not analyzed in detail

Alternatives considered but not analyzed in detail for the **Westway Federal POD** are described in detail, if applicable.

2.5. Summary of Alternatives

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

Table 2.1 Summary of the Alternatives

Figures within the action alternatives represent additional facilities and do not include the existing facilities.

Facility	Alternative A (No Action) Existing Number/ Acres)	Alternative B (Operator Proposal) Proposed Number/ Acres)	Alternative C (Modified Alt.) Revised Number/ Acres)
Total CBNG Wells	-	17	13

Facility	Alternative A (No Action) Existing Number/ Acres)	Alternative B (Operator Proposal) Proposed Number/ Acres)	Alternative C (Modified Alt.) Revised Number/ Acres)
Well Locations Nonconstructed Constructed	-	4.13 6.6	3.10 6.0
Gather/Metering Facilities Number of Facilities Acreage of Facilities	0 0.0	0 0.0	0 0.0
Compressors Number of Compressors Acreage of Compressors	2 1.89	0 0.0	0 0.0
Number of Ancillary Facilities (Staging/Storage Areas)	0 0.0	5 4.6	5 4.6
Acres of Template/ Spot Upgrade Roads No Corridor With Corridor	3.75 12.93	0 14.91	0 10.73
Acres of Engineered Roads No Corridor With Corridor	0 8.51	0 3.09	0 2.8
Acres of Buried Power No Corridor With Corridor	3.75 21.44	0.14 17.86	0 13.53
Acres of Pipeline No Corridor With Corridor	3.75 21.44	0 18	0 13.53
Acres of Overhead Powerlines	5.49	8.7	8.7
Number of Impoundments On-channel	0 0.0	5 11.13	5 11.13
Water Discharge Points	0	0.25	0.25
TOTAL ACRES DISTURBANCE	33	54	47

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. A screening of all resources and land uses potentially affected is included in

Appendix A. Resources that would be unaffected, or not affected beyond the level analyzed within the PRB FEIS, are not discussed within the EA.

Applications to drill were received on July 1, 2009. Field inspections of the proposed Westway Federal POD CBNG project were conducted on 4/9/2010 and 4/15/2010. Personnel attending the field inspections are identified in section 5 Consultation and Coordination.

3.1. Topographic Characteristics of Project Area

Elevations within the project area range from 3,600 to 4,100 feet above sea level. The general topography throughout the area is characterized by moderately sloped coniferous ridges and draws descending to flat floodplains of the Powder River. Lynn Draw and Cross H Creek drain the project area. These ephemeral draws are tributary to the Powder River, which is located west of the POD boundary. The climate in the area is semi-arid, averaging 12 inches of precipitation annually, more than 60% of which occurs between April and September. Current land uses within the project area include livestock grazing and CBNG development.

3.2. Soils & Vegetation

The Powder River Basin is composed of relatively young soils which 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. Soils have surface and subsurface textures of silt loam and fine sandy loam. Soil depths vary from deep on lesser slopes to shallow and very shallow on steeper slopes. Soils are generally productive, though varies with texture, slope and other characteristics. Soils differ with topographic location, slope and elevation. Topsoil depths to be salvaged for reclamation range from 0 to 4 inches on ridges to 8+ inches in bottomland.

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 3.1). Ecological Site Descriptions are soil and vegetation community descriptions compiled by the Natural Resources Conservation Service (NRCS) for the purpose of resource identification, and providing management and reclamation recommendations.

Table 3.1 Dominant soils affected by the proposed action include:

Map Unit	Map Unit Name	Acres	Percent
201	PARMLEED-BIDMAN ASSOCIATION, 3 TO 15 PERCENT SLOPES	220.284	10.83%
260	SHINGLE-ROCK OUTCROP COMPLEX, 30 TO 50 PERCENT SLOPES	897.251	44.11%
317	ZIGWEID-KISHONA-CAMBRIA COMPLEX, 6 TO 15 PERCENT SLOPES	608.475	29.91%

Soils within the project area were identified from the Sheridan County Survey Area. The soil survey was performed by the Natural Resource Conservation Service according to National Cooperative Soil Survey standards. Pertinent information for analysis was obtained from the published soil survey and the National Soils Information System (NASIS) database for the area.

The major vegetation community in the upland areas is mixed conifer and shrubland. Ponderosa pine (*Pinus ponderosa*) and juniper trees (*Juniperus scopulorum*) is the predominant overstory species with patches of big-sagebrush (*Artemisia tridentata* spp.), silver sagebrush (*A. cana*) intermixed with native grasses in the understory. Native grasses within the uplands include: western wheatgrass (*Agropyron smithii*), needleandthread (*Stipa comate*), Sandberg bluegrass (*Poa sandbergii*), green needlegrass (*S. viridula*), threadleaf sedge (*Carex filifolia*), blue grama (*Bouteloua gracilis*), and downy brome (*Bromus tectorum*).

Lowland areas are comprised of steep ephemeral stream channels predominantly vegetated by native grasses and forbs. Common species include Kentucky bluegrass (*P. pratensis*), western wheatgrass, basin wildrye (*Elymus cineris*) and western yarrow (*Achillea lanulosa*). Scattered cottonwood trees (*Populus deltoids*) also occur within the ephemeral draws of the project area.

3.2.1. Soils Susceptible to Erosion

Loss in productivity is likely to occur on most soils if erosion continues unchecked. Because soil formation is a very slow process, most soils cannot renew their eroded surface while erosion continues.

The development of a favorable rooting zone by the weathering of parent rock is much slower than development of the surface horizon. One estimate of this renewal rate is 0.5 ton per acre per year for unconsolidated parent materials and much less for consolidated materials. These very slow renewal rates support the philosophy that any soil erosion is too much. Loss of organic matter, resulting from erosion and tillage, is one of the primary causes for reduction in production yields. As organic matter decreases, soil aggregate stability, the soil’s ability to hold moisture, and the cation exchange capacity decline. (Soil Quality-Agronomy Technical Note #7, USDA, Aug 1998)

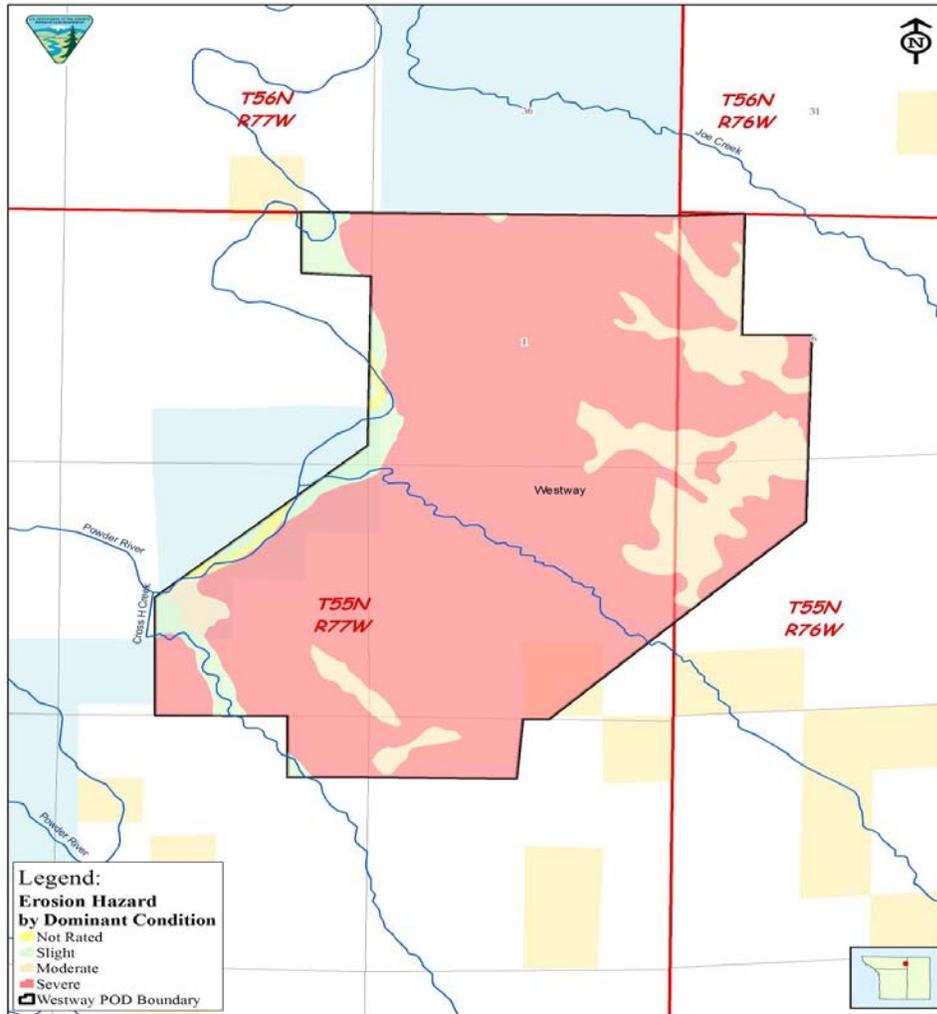
Severe erosion hazard ratings, covers 1666 acres (82%) of the project area with a depth 6 inches or less. On the surface, vegetation is sparse or barren on slopes, highly dissected and gullied with active erosion ranging from slight to severe.

The three components of the complex have the lowest rating as a source of topsoil or reclamation material. Paralithic bedrock 10 to 20 inches subsurface of the complex is an extremely weak cemented layer averaging 10 to 50 inches thick with the lowest rating as a construction material source.

Table 3.2 Erosion Potential within the POD Project Area

Erosion Potential	Acres	% of Project Area
Severe	1666	82%
Moderate	265	13%
Slight	89	4.50%
Not Rated	14.5	1%

Figure 3.1 Erosion Hazard within the Westway Project Area



3.2.2. Slope Hazard

A soil's stability is greatly affected by the slope on which it occurs. In general, the greater the slope, the greater the potential for slumping, landslides and water erosion. Approximately 169 acres (8.0%) in the project area have slopes of 25% or more. Slopes greater than 25% are shown on Figure 3.4 below.

Soils with slopes of less than 25% may also be prone to high erosion because of the soil type, particle size, texture, or amount of organic matter. Soil types in the POD area with severe erosion potential, as defined by the Natural Resources Conservation Service (NRCS; USDA NRCS 2007), are listed in Tables 3.1 and 3.2 along with the number of acres and percentage of the project area.

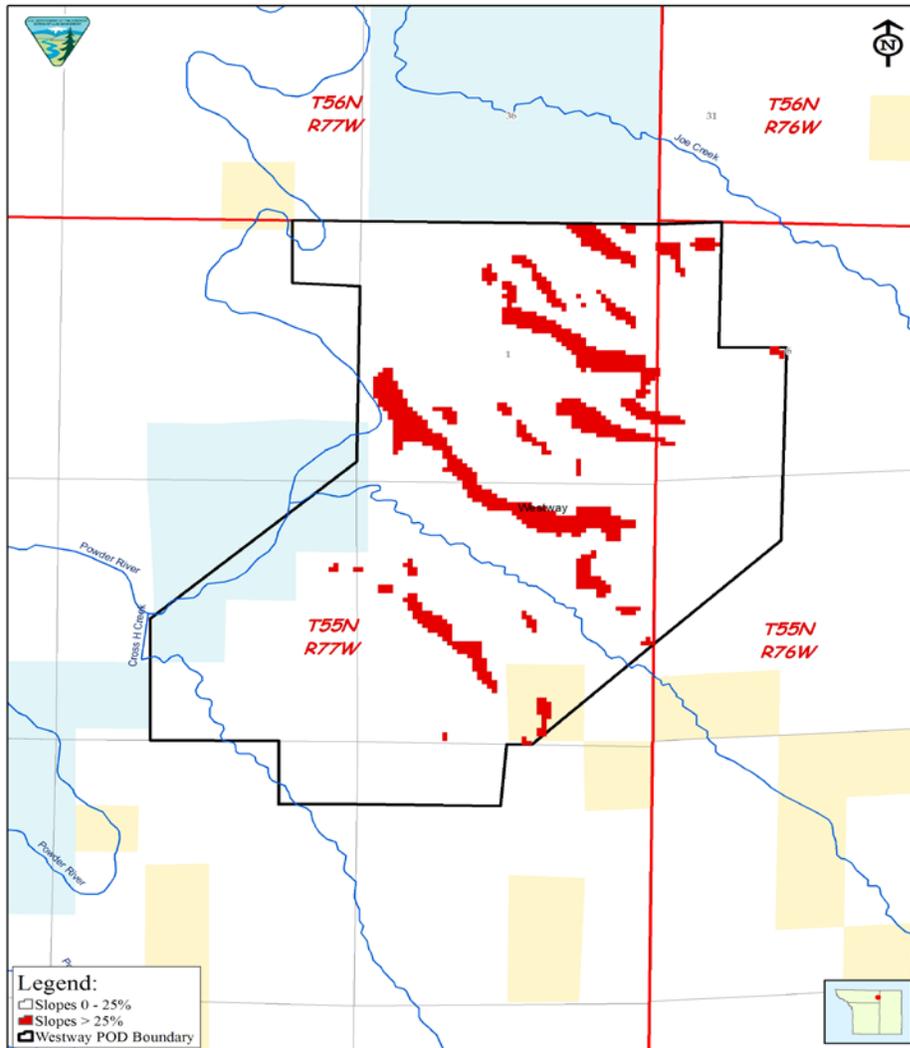
Other contributing factors to slope stability include slope length, slope aspect and colluvium. Slope length has considerable control over runoff and potential accelerated water erosion. Slope aspect is the direction which the surface of the soil faces. Slope aspect may affect soil temperature, evapotranspiration, wind contact and soil moisture. Colluvium is poorly sorted debris that has accumulated at the base of slopes, in depressions, or along small streams through gravity, soil creep, and local wash. It consists largely of material that has rolled, slid or fallen down the slope under the influence of gravity. The rock fragments in colluvium are usually angular, in contrast to the rounded, water-worn cobbles and stones in

alluvium and glacial outwash. These factors in combination with slope determine soil stability and the potential for mass soil movement.

Table 3.3 – Percent Slope within the Westway Project Area

% Slope	Acres	% of Project Area
0-24%	1866	92.0%
Greater than or Equal to 25%	169	8.0%

Figure 3.4 Areas of Slopes Exceeding 25% within the Project Area



3.2.3. Ecological Sites

Ecological Site Descriptions are used to provide site and vegetation information needed 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 Natural Resources Conservation Service published soil survey soils information.

Table 3.4 Map Units and Ecological Sites:

Map Unit	Ecological Site
266	Shallow Loamy (10-14" NP)
260	Shallow Loamy (10-14" NP)
166	Sandy (10-14" NP)
158	Lowland (10-14" NP)
154	Lowland (10-14" NP)
317	Loamy (10-14" NP)
268	Loamy (10-14" NP)
201	Loamy (10-14" NP)
172	Loamy (10-14" NP)
117	Loamy (10-14" NP)
277	Rock Outcrop
321	Water

Dominant Ecological Sites and Plant Communities identified in this POD and its infrastructure are Shallow Loamy (10-14" NP) and Loamy (10-14" NP) sites.

Shallow Loamy (10-14" NP): Using the Natural Resource Conservation Service, (NRCS, USDA), Technical Guides for the Major Land Resource Area 58B Northern Rolling High Plains, in the 10-14" Northern Plains precipitation zone, the landforms and the soils of this site are shallow (less than 20" to bedrock) well-drained soils formed in alluvium over residuum or residuum. These soils have moderate permeability and may occur on all slopes. The bedrock may be any kind which is virtually impenetrable to plant roots, except igneous. The surface soil will have one or more of the following textures: very fine sandy loam, loam, silt loam, sandy clay loam, silty clay loam, and clay loam. Thin ineffectual layers of other textures are disregarded. Layers of the soil most influential to the plant community vary from 3 to 6 inches thick.

This site occurs on steep slopes and ridge tops, but may occur on all slopes. Landform: Hill sides, ridges and escarpments.

The main soil limitations include: depth to bedrock, low organic matter content, and soil droughtiness. The low annual precipitation should be considered when planning a seeding.

Mixed Sagebrush/Grass Plant Community

Historically, this plant community evolved under grazing by bison and a low fire frequency. Currently, it is found under moderate, season-long grazing by livestock in the absence of fire or brush control. 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 bluebunch wheatgrass, rhizomatous wheatgrasses, and blue grama. Grasses of secondary importance include little bluestem, 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. Big sagebrush canopy ranges from 20% to 30%. Fringed sagewort is commonly found. Plains pricklypear and winterfat can also occur.

When compared to the Historical Climax Plant Community, big sagebrush and blue grama have increased. Bluebunch wheatgrass has decreased, often occurring only where protected from grazing by the sagebrush canopy. Production of cool-season grasses has also been reduced. Cheatgrass (downy

brome) has invaded the state. The overstory of big sagebrush and understory of grass and forbs provide a diverse plant community that will support domestic livestock and wildlife such as mule deer and antelope.

The state is stable and protected from excessive erosion. The biotic integrity of this plant community is usually intact. However, it can be at risk depending on how far a shift has occurred in plant composition toward blue grama, sagebrush, and/or cheatgrass. The watershed is usually functioning. However, it can become at risk when canopy cover of sagebrush, blue grama sod, and/or bare ground increases.

Loamy (10-14" NP): Using the Natural Resource Conservation Service, (NRCS, USDA), Technical Guides for the Major Land Resource Area 58B Northern Rolling High Plains, in the 10-14" Northern Plains precipitation zone, the landforms and the soils of this site are deep to moderately deep (greater than 20" to bedrock), well drained & moderately permeable. Layers of the soil most influential to the plant community varies from 3 to 6 inches thick. These layers consist of the A horizon with very fine sandy loam, loam, or silt loam texture and may also include the upper few inches of the B horizon with sandy clay loam, silty clay loam or clay loam texture.

This site occurs on gently undulating rolling land. Landform: Hill sides, alluvial fans, ridges & stream terraces.

The main soil limitations include: low organic matter content and soil droughtiness. The low annual precipitation should be considered when planning a seeding.

Mixed Sagebrush/Grass Plant Community

Historically, this plant community evolved under grazing by bison and a low fire frequency. Currently, it is found under moderate, season-long grazing by livestock in the absence of fire or brush management. 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 grasses, and miscellaneous forbs.

Dominant grasses include needleandthread, western wheatgrass, and green needlegrass. Grasses of secondary importance include blue grama, prairie junegrass, and Sandberg bluegrass. Forbs commonly found in this plant community include plains wallflower, hairy goldaster, slimflower scurfpea, and scarlet globemallow. Sagebrush canopy ranges from 20% to 30%. Fringed sagewort is commonly found. Plains pricklypear can also occur.

When compared to the Historic Climax Plant Community, sagebrush and blue grama have increased. Production of cool-season grasses, particularly green needlegrass, has been reduced. The sagebrush canopy protects the cool-season mid-grasses, but this protection makes them unavailable for grazing.

Cheatgrass (downy brome) has invaded the site. The overstory of sagebrush and understory of grass and forbs provide a diverse plant community that will support domestic livestock and wildlife such as mule deer and antelope.

This plant community is resistant to change. A significant reduction of big sagebrush can only be accomplished through fire or brush management. The herbaceous species present are well adapted to grazing; however, species composition can be altered through long-term overgrazing. If the herbaceous component is intact, it tends to be resilient if the disturbance is not long-term.

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 3.5 Summary of Ecological Sites

Ecological Site	Acres	Percent
Shallow Loamy (10-14" NP)	949.42	46.67%
Sandy (10-14" NP)	25.923	1.27%
Lowland (10-14" NP)	89.047	4.38%
Loamy (10-14" NP)	939.284	46.18%
Rock Outcrop	15.94	0.78%
Water	14.558	0.72%

3.2.4. Reclamation Potential

Soils with poor reclamation and re-vegetation potential occur throughout the project area as shown in the table below. Currently, soil conditions in the project area are being impacted by CBNG development as well as traditional activities, including livestock grazing and wildlife use. Much of the area is covered with soils that are easily damaged by use or disturbance or are difficult to re-vegetate or otherwise reclaim. Soil impacts (e.g., roads, linear pipeline scars, and artificial wet areas) can be readily observed in the area. This high erosion potential could result in higher suspended sediment and turbidity levels in the Powder River.

In the absence of recoverable topsoil as is common throughout the project area, the surface organic matter in the form of vegetation, litter and biological crust are critical to maintaining the integrity and viability of the soil.

Table 3.6 Reclamation Potential within the Westway Federal POD Project Area

Reclamation Potential		
	Moderate	Poor
Total Acres	1028.33	1005.84
% of Project Area	50.55%	49.45%

Reclamation potential of soils varies throughout the project area. 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. Many of the soils and landforms of this area present distinct challenges for development. Approximately 46.67 % of the area within the boundary of the proposed action contains soil mapping units with a named component identified as being a highly susceptible water erosion and 8.31% of the area has slopes greater than 25% making stabilization of disturbance and reclamation challenging and possibly unachievable.

The changes to the proposed action resulted in development of Alternatives B and C. These changes have reduced impacts to the environment which will result from this action; therefore only the environmental consequences of Alternative B and Alternative C are described below.

3.2.5. Invasive Species

Currently the State of Wyoming has designated 25 species as noxious weeds, pursuant to the Wyoming Weed & Pest Control Act. The following 24 species are applicable to this plan. Note that the species listed in bold are of specific concern to the Sheridan County Weed & Pest Office for the Westway POD area:

- Canada Thistle
- Hoary Cress (Whitetop)
- Leafy Spurge

- Russian Knapweed
- Saltcedar

Additionally, the Operator and BLM in conjunction with the Sheridan County Weed & Pest Board of Directors have declared the following species as weeds of concern which are applicable to this plan:

- Buffalobur
- Common Cocklebur
- Common Mullein
- Curly Dock
- Puncturevine
- Wild Licorice

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 U.S. Fish & Wildlife Service, the Wyoming Game and Fish Department (WGFD) big game and sage-grouse maps, and the Wyoming Natural Diversity Database (WYNDD).

Habitat assessment and wildlife inventory surveys of the Westway project area were performed by Arcadis in 2008 and 2009. Arcadis performed surveys for bald eagle nesting and roosting habitat, raptor nest occupancy and productivity, greater sage-grouse and sharp-tailed grouse lek and nesting habitat, black-tailed prairie dog colony delineation, mountain plover breeding and nesting habitat and activity.

Arcadis also conducted suitability surveys Ute ladies'-tresses orchid habitat in 2008. All surveys were conducted according to the Powder River Basin Interagency Working Group's protocols (available on the BFO internet website at http://www.blm.gov/wy/st/en/field_offices/Bufalo/wildlife.html).

The BLM biologist conducted a field visit on April 9 and 16, 2010. During that time, the biologist verified the wildlife survey information, evaluated impacts to wildlife resources, and recommended project modifications 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.

WGFD is the agency responsible for management of wildlife populations in the state of Wyoming.

WGFD has developed several guidance documents that BLM BFO wildlife staff relies upon in evaluating impacts to wildlife and wildlife habitats. WGFD documents used to analyze the proposed project under the current analysis are referenced in this section.

In its *Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats* (WGFD 2009a), WGFD developed impact thresholds to evaluate impacts to wildlife from oil and gas development. For species or habitats discussed in this EA where impact thresholds have been developed, those thresholds will be disclosed and discussed both in relation to the current conditions (Affected Environment) and in relation to reasonable foreseeable development, including development associated with the proposed project (Impacts Analysis). Moderate impacts occur when impairment of habitat function becomes discernable. High impacts occur when impairment of habitat function increases.

Extreme impacts occur where habitat function is substantially impaired. Mitigation for each level of impact is discussed in the guidelines. Thresholds for impacts are generally determined by well densities.

3.3.1. Threatened, Endangered, Proposed, Candidate, and BLM Sensitive Species

3.3.1.1. Threatened and Endangered Species

Threatened, Endangered, Candidate and Proposed species that will be impacted beyond the level analyzed within the PRB FEIS are described below.

3.3.1.1.1. 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. WGFD has 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 Westway project area is located within the Arvada complex, the nearest potential reintroduction area.

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). Three active black-tailed prairie dog colonies were identified within 0.75 miles of the project boundary by Arcadis, totaling 69 acres. Black-footed ferret habitat is not present within the project area.

3.3.1.1.2. Blowout Penstemon

Blowout penstemon is listed as Endangered under the ESA. It is a regional endemic species with documented populations in the Sand Hills of west-central Nebraska and the northeastern Great Divide Basin of Carbon County, Wyoming. Suitable blowout penstemon habitat consists of sparsely vegetated, early successional, shifting sand dunes and blowout depressions created by wind. In Wyoming, the habitat is typically found on sandy aprons or the lower half of steep sandy slopes deposited at the base of granitic or sedimentary mountains or ridges. The Westway project area does not contain areas with these characteristics, and blowout penstemon is not expected to occur.

3.3.1.1.3. 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. A WYNDD model predicts undocumented populations may be present particularly within southern Campbell and northern Converse Counties.

An evaluation by Arcadis in 2008 for potential Ute ladies'-tresses habitat in the project area indicated that potential ULT habitat does exist in the portion of the project area along the Powder River. Surveys were done by Arcadis in September, 2009 in potential habitat with proposed project construction. No ULTs were found. No springs, wet meadows or perennial water were found in the project interior (Arcadis 2009).

3.3.1.2. Proposed Species

3.3.1.2.1. Mountain Plover

On 6/29/2010 the U.S. Fish and Wildlife Service reentered the mountain plover as proposed for

threatened species listing under the Endangered Species Act. At the time the PRB FEIS was written, the mountain plover was proposed for listing. In 2003, the Service 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 WGFD SGCN, with a rating of NSS4, because population status and trends are unknown but are suspected to be stable, habitat is vulnerable without ongoing 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. The affected environment for mountain plover is discussed in the PRB FEIS on pg. 3-177 to 3-178.

Small, isolated patches of suitable mountain plover habitat are present within the project area. However, the rolling terrain and height of vegetation in the project area limits its suitability for mountain plover. Surveys conducted by Arcadis in May and June of 2009 did not document presence of mountain plovers.

3.3.1.3. Candidate Species

3.3.1.3.1. Greater Sage-grouse

In 2010, USFWS determined that the sage-grouse is warranted for federal listing across its range, but listing is precluded by other higher priority listing actions. In addition to being listed as a Wyoming BLM sensitive species, sage-grouse are listed as a WGFD species of greatest conservation need, because populations are declining and they are experiencing ongoing habitat 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.

There are 2034 acres within the Westway POD boundary of which approximately 763 acres (38%) are modeled as high quality nesting habitat and 128 acres (6%) are high quality winter habitat. During the onsite visit of the project area it was noted that sagebrush cover ranges from sparse to moderately dense in rough to moderately rough terrain with ridges and draws or in rolling hills and flats cut by moderately steep draws. No sage-grouse or their sign was seen by the BLM biologist during the onsite visit.

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 one sage-grouse lek, the Weller lek occurs within four miles of the project area. The Weller lek which is 2.1 miles to the west of the Westway POD boundary is classified as occupied and is in a BLM Focus Area. Wyoming BLM policy guidelines for sage-grouse require effects analysis of 11 miles to include impacts on all seasonal habitats from energy projects (BLM 2009). There are 12 occupied leks within 11 miles of the project area. None of these leks are within Wyoming Governors' Core areas, but the Weller and six of the other leks are within a BFO sage-grouse Focus Area and state sage-grouse implementation team designated Connectivity Area.

In its *Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats* (2009), WGFD categorized impacts to sage-grouse 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.

3.3.1.4. Sensitive Species

Wyoming BLM has prepared a list of sensitive species for 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

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. BLM Wyoming sensitive species that will be impacted beyond the level analyzed within the PRB FEIS are described below.

3.3.1.4.1. 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 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.

The Westway POD borders the Powder River to the east. The cottonwood galleries in the river channel along with ponderosa pines in the uplands within the POD provide excellent bald eagle roost habitat.

Winter surveys by Arcadis for the Westway POD observed a total of four individual bald eagles along the Powder River between 12/18/2010 and 2/4/2009. The closest identified winter roost concentration is one mile to the southwest of the POD. The closest documented bald eagle nest is along Clear Creek, 3.2 miles to the northwest of the POD. The last report on the nest in 2007 listed it as inactive. One observation of a bald eagle has been reported within the Westway POD.

3.3.1.4.2. 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. Habitat is present in the POD and Brewer's sparrows likely are present.

3.3.1.4.3. 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. Habitat is present in the POD and loggerhead shrikes may occur.

3.3.1.4.4. 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 WGFD 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. Habitat is present in the POD and sage thrashers may occur.

3.3.1.4.5. 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 substantial recent or ongoing 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. No burrowing owls have been documented within ½ mile of the Westway POD but habitat is present and burrowing owl nesting has been reported within two miles of the POD.

3.3.1.4.6. 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 substantial loss of habitat, and they are sensitive to human disturbance. Habitat is present. Species may occur.

3.3.1.4.7. 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 substantial loss of habitat, and they are sensitive to human disturbance. Habitat is present. Species may occur.

3.3.1.5. Big Game

The affected environment for pronghorn and mule deer is discussed in the PRB FEIS on pp. 3-117 to 3-122 and pp. 3-127 to 3-132, respectively. Both pronghorn and mule deer and their sign were observed during the onsite. WGFD data indicate that the project area is winter yearlong range for mule deer. A small portion of the POD is classified as pronghorn yearlong range and a portion of the project area is classified as yearlong range for white-tailed deer. Winter-yearlong use occurs when animals make general use of habitat on a year-round basis. However, there is a significant influx of additional animals into the area from other seasonal ranges during the winter months. 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. All three species have been at or above Wyoming Game & Fish Dept. objectives.

3.3.1.6. Aquatics

The Powder River Basin ecosystem and fishery is discussed in further detail in the PRB FEIS (pp. 3-153 to 3-166). The Westway POD is drained by Lynn Draw and Cross Creek, both ephemeral streams flow when there is precipitation or snowmelt. Both streams flow directly into the Powder River at the western border of the POD.

3.3.1.7. Migratory Birds

The affected environment for migratory birds is discussed in the PRB FEIS (pp. 3-150 to 3-153).

Migratory birds are those that migrate for the purpose of breeding and foraging at some point in the year.

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. The three habitat types in the POD are; ponderosa pine/juniper and shrubland dominated by big sage in the uplands, and lowlands of ephemeral steams with native grasses, forbs, and scattered cottonwoods. 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 (WGFD 2009). Species that may occur in these vegetation types in northeast Wyoming, according to the Wyoming Bird Conservation Plan, are listed in Table 3.7 and are grouped by Level as identified in the Plan.

Table 3.7 High priority bird species that occur in the major vegetation type within the POD project area

Level	Species	Wyoming BLM Sensitive
Level I	Brewer’s sparrow	Yes
	Greater sage-grouse	Yes
	Mountain plover	Yes
	Sage sparrow	Yes
	Short-eared owl	
	Upland sandpiper	
	Western burrowing owl	Yes
Level II	Black-chinned hummingbird	
	Lark bunting	
	Lark sparrow	
	Loggerhead shrike	Yes
	Sage thrasher	Yes
	Vesper sparrow	
Level III	Common poorwill	
	Say’s phoebe	

3.3.1.8. Raptors

The affected environment for raptors is discussed in the PRB FEIS on pp. 3-141 to 3-148. Three raptor species are known to have used nests within 0.5 miles of the project area: golden eagle, red-tailed hawk, and American kestrel. 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 Bird Conservation Region (BCR) 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 extensive 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.

Fifteen raptor nest sites have been documented to occur within 0.5 mile of the project boundary. These are listed in the Table 3.8. Only one of the nests listed, golden eagle nest # 3631 was active in 2010.

Table 3.8 Raptor Nests in the Westway POD

BLM ID	UTMs	Legal	Substrate	Year	Condition	Status	Species
591	413682E 4958422N	S2 T55N R77W	CTL	2010	Nest Gone	DNLO	n/a
				2009	Nest Gone	DNLO	n/a
				2007	Nest Gone	INAC	n/a
592	413705E 4958498N	S2 T55N R77W	CTL	2010	Nest Gone	DNLO	n/a
				2009	Nest Gone	DNLO	n/a
				2007	Nest Gone	INAC	n/a
621	418156E 4957512N	S5 T55N R76W	UNK	2009	Unknown	DNLO	n/a
3631	414932E 4958360N	S1 T55N R77W	CLF	2010	Good	ACTI	GOEA
				2009	Good	ACTI	GOEA
				2006	Excellent	INAC	n/a
				2005	Excellent	ACTI	GOEA
				2004	Nest Gone	INAC	n/a
3633	413502E 4959639N	S35 T56N R77W	CTL	2009	Good	INAC	n/a
				2007	Fair	INAC	n/a
				2006	Excellent	INAC	n/a
				2005	Excellent	ACTI	RETA
				2004	Nest Gone	INAC	n/a
5431	416810E 4959128N	S31 T56N R76W	CLF	2010	Poor	INAC	n/a
				2009	Good	INAC	n/a
				2008	Fair	UNK	n/a
				2007	Nest Gone	INAC	n/a
				2006	Nest Gone	INAC	n/a
5436	416858E 4959158N	S31 T56N R76W	POL	2010	Poor	INAC	n/a
				2009	Fair	INAC	n/a
				2008	Nest Gone	INAC	n/a
				2007	Nest Gone	INAC	n/a
				2006	Nest Gone	INAC	n/a
5439	416888E 4959258N	S31 T56N R76W	POL	2010	Nest Gone	DNLO	n/a
				2009	Nest Gone	INAC	n/a
				2008	Poor	INAC	n/a
				2007	Nest Gone	INAC	n/a
				2006	Remnants	INAC	n/a

BLM ID	UTMs	Legal	Substrate	Year	Condition	Status	Species
5442	417055E 4959283N	S31 T56N R76W	POL	2010	Good	DNLO	n/a
				2009	Nest Gone	INAC	n/a
				2007	Good	ACTI	RETA
5457	398631E 4895219N	S20 T49N R78W	CKB	2009	Good	INAC	n/a
				2008	Good	INAC	n/a
8454	414234E 4956367N	S12 T55N R77W	ROC	2010	Fair	INAC	n/a
				2009	Unknown	INAC	n/a
8457	414582E 4955750N	S12 T55N R77W	POL	2010	Poor	INAC	n/a
				2009	Good	INAC	n/a
				2009	Fair	INAC	n/a
8458	412539E 4955484N	S15 T55N R77W	CTL	2010	Nest Gone	DNLO	n/a
				2009	Poor	INAC	n/a
8459	414614E 4955430N	S13 T55N R77W	POL	2010	Poor	INAC	n/a
				2009	Poor	INAC	n/a
				2009	Poor	INAC	n/a
8460	414706E 4955413N	S13 T55N R77W	POL	2010	Nest Gone	INAC	n/a
				2009	Unknown	INAC	n/a
10787	416026E 4955706N	S7 T55N R76W	POL	2010	Good	INAC	n/a
				2009	Fair	INAC	n/a
10788	415135E 4956636N	S12 T55N R77W	CTL	2010	Poor	INAC	n/a
				2009	Poor	INAC	n/a

Notes

1. CLF = Cliff; CKB = Creek bank; CTL = Cottonwood (live); POL = Ponderosa pine (live); ROC = Rock cavity; UNK = Unknown
2. GOEA = Golden eagle; RETA = Red-tailed hawk

3.3.1.9. Plains Sharp-tailed Grouse

The affected environment for plains sharp-tailed grouse is discussed in the PRB FEIS on pp. 3-148 to 3-150. Habitat is present in the project area and they may occur.

3.4. Water Resources

The project area is within the Lynn Draw and Cross H Creek watersheds, which are tributaries to the Powder River within the Upper Powder River drainage system. Lynn Draw and Cross H Creek drainages consist of moderately steep coniferous/shrub land ridges and draws descending towards the flat flood plains of the Powder River. These drainages and their tributaries are ephemeral streams flowing only during precipitation event or snowmelt runoff. The overall drainages volume is dependent upon the amount and duration of these precipitation events in the tributary streams. These draws transition to well-vegetated channels as they approach the proposed reservoir locations and the Powder River.

The Wyoming Department of Environmental Quality (WDEQ) has assumed primacy from United States

Environmental Protection Agency for maintaining the water quality in the waters of the state. The Wyoming State Engineer's Office (WSEO) has authority for regulating water rights issues and permitting impoundments for the containment of surface waters of the state. The Wyoming Oil and Gas Conservation Commission (WYOGCC) has authority for permitting and bonding off channel pits that are located over State and fee minerals.

3.4.1. Groundwater

The groundwater in this project area has historically been used for stock water or domestic purposes. A search of the Wyoming State Engineer Office (WSEO) Ground Water Rights Database for this area showed three (3) registered stock and domestic water wells within ½ mile of a federal CBNG producing well in the POD with depths ranging from 320 to 850 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).

WDEQ water quality parameters for groundwater classifications (Chapter 8 – Quality Standards for Wyoming Groundwater) define the following general limits for Total Dissolved Solids (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). For additional water quality limits for groundwater, please refer to the WDEQ web site.

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):

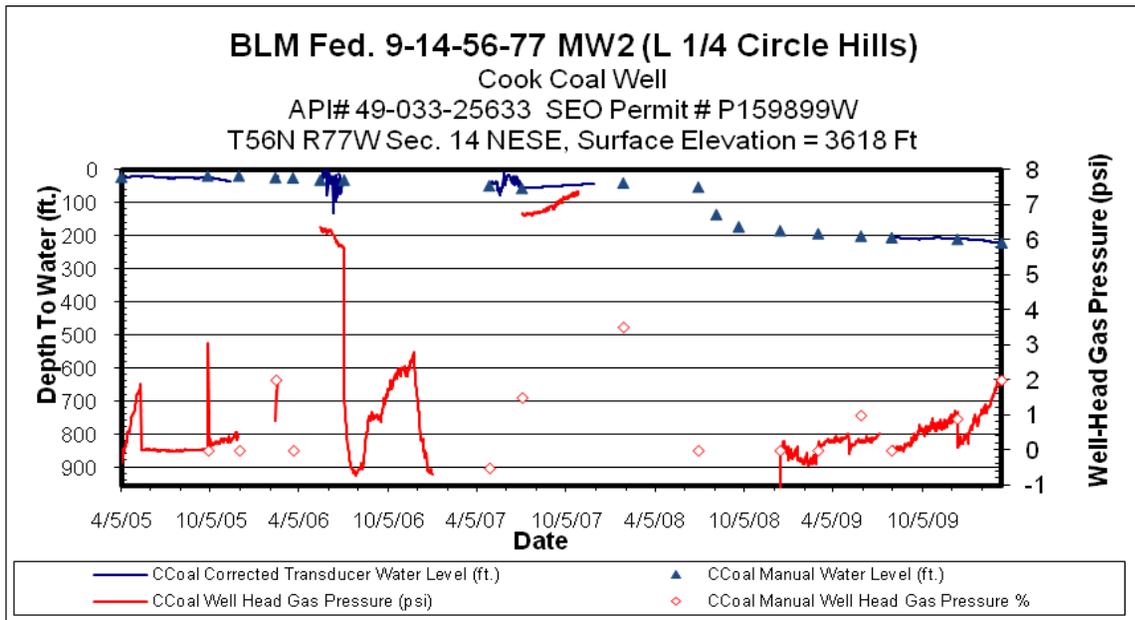
- The effects of infiltrated waters on the water quality of existing shallow groundwater aquifers are not well documented at this time;
- Potential impacts will be highly variable depending upon local geologic and hydrologic conditions;
- It may be necessary to conduct investigations at representative 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.

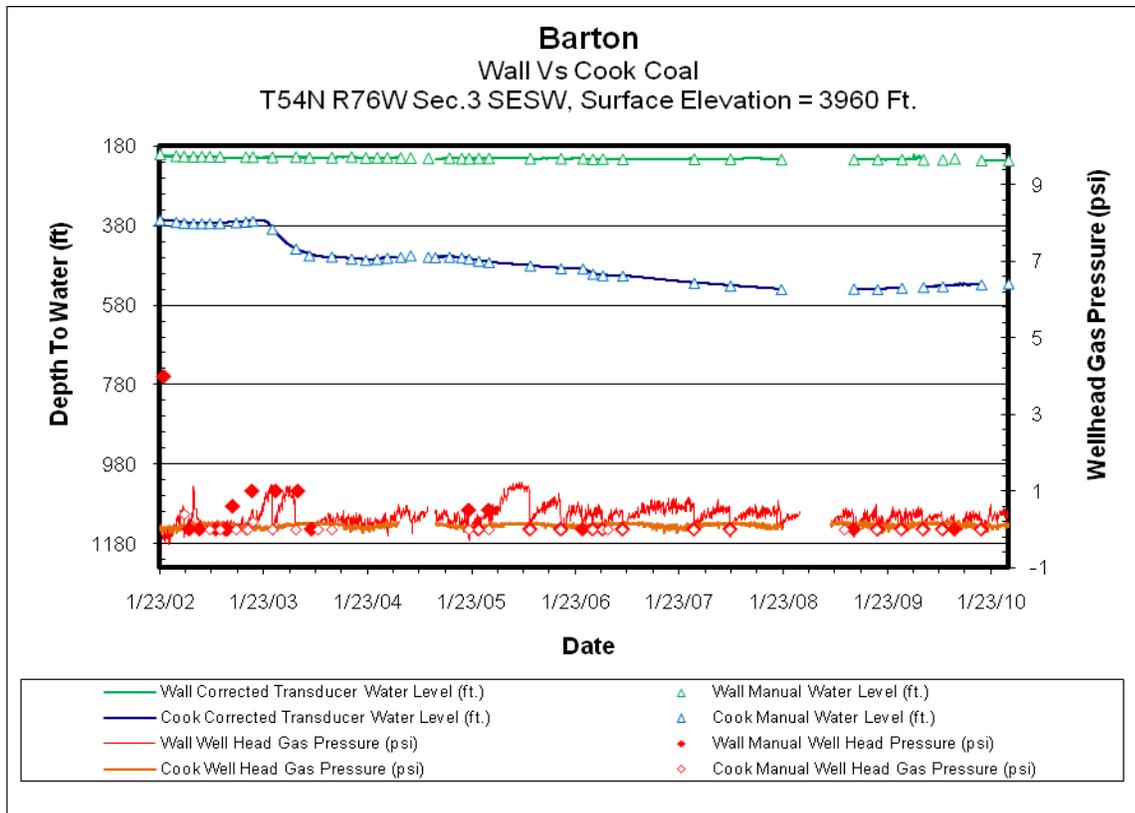
The production of CBNG necessitates the removal of some degree of the water saturation in the coal zones to temporarily reduce the hydraulic head in the coal. The Buffalo Field Office has been monitoring coal zone pressures as expressed in depth to water from surface since the early 1990's in the PRB.

As a result, the target coal zone pressure may have been reduced through off set water production. The L Quarter Circle Hills Cook Coal Groundwater Monitoring Well (GMW), located approximately 3.3 miles north of the POD boundary, was installed by Pennaco Energy as a part of the BLM deep groundwater monitoring program (See the chart below, L ¼ Circle Hills). The Barton Wall and Cook Coal (GMW), located approximately 6 miles southeast of the POD boundary, was drilled by CMS and installed as a monitor well in 2002 (See the chart below, Barton). The initial water level of the L Quarter Circle Hills Cook Coal, which is indicative of the pressure in the coal zone, was recorded at 22.86 feet below ground level, dated 4/5/2005. The most recent measurement, dated 3/17/2010 recorded the water level at 220.86

feet below ground level, for a decline of 198 feet since the well was completed. The initial water level of the Barton Wall and Cook Coal, was recorded at 200.48 feet and 364.5 feet below ground level, respectively for the Wall and Cook coals, dated 1/23/2002. The most recent measurement, dated 3/22/2010 recorded the water level at 215.58 feet and 525.83 feet below ground level, for a decline of 15.10 feet and 161.33 feet, respectively, since the well was completed. See the charts shown below for a graphical representation of these two wells.

This level of depressurization is within the potential predicted in the PRB FEIS which was determined through the Regional Groundwater Model for that document. For additional information, please refer to the PRB FEIS Chapter 4 Groundwater and the Wyoming State Geological Survey's Open File Report 2009-10 titled "1993-2006 Coalbed Natural Gas (CBNG) Regional Groundwater Monitoring Report: Powder River Basin, Wyoming" which is available on their website at <http://www.wsgs.uwyo.edu>.





There is currently active approved and pending CBNG development to the North, East and South of the POD Boundary and monitoring wells. The additional 13 APD's for the Westway development will add to the existing impacts of the wells in the area, however, all the wells may not be drilled or will be drilled over time. Because of the proximity to existing and proposed wells it is likely that depressurization will continue.

3.4.2. Surface Water/Wetlands/Riparian

The project area is within the Lynn Draw and Cross H Creek drainages which is tributary to the Upper Powder River 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). These draws transition to well-vegetated channels as they approach the proposed reservoir locations and the Powder River. Scattered cottonwood trees do exist in the ephemeral drainages of the POD boundary as well as native forbs and grasses. Common species include Kentucky bluegrass, western wheatgrass, basin wildrye and western yarrow.

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 Watershed 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 the Powder River at Arvada, WY (PRB FEIS page 3-49).

The operator has stated that there are no natural springs within the Westway Federal POD boundary and that none were identified by a search of the SEO database.

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

3.5. 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 BLM’s 2009 Reasonably Foreseeable Development Scenario, the drilling of the 17 proposed wells in the Westway Federal POD will generate approximately 0.23 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 Westway Federal POD would have several benefits. 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 Westway Federal POD wells would return to the State of Wyoming. This revenue from mineral development contributes to Wyoming’s economy, and allows for improvements in state funded programs such as infrastructure and education. The development of the Westway Federal POD project would also provide local revenue by employing workers in the area to build the roads and project infrastructure, drill the wells, and maintain and monitor the project area. This pool of individuals employed to work on the Westway Federal POD project would also result in an increase in demand for goods and services from nearby communities, primarily those in Campbell, Johnson and Sheridan County.

3.6. Cultural Resources

Class III cultural resource inventory was performed for the Westway POD prior to on-the-ground project work (BFO project no. 70090092). ACR Consultants, Inc. conducted a block and linear 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. Ardeth Hahn, 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.

During onsite it was noted that visibility was inadequate to conduct Class III inventory within drainages, due to heavy vegetation. Some of the project area analyzed in this EA occurs on deep alluvial deposits.

Alluvial deposits typically have a high potential for buried cultural resources, which are nearly impossible to locate during a Class III inventory.

Table 3.9 Cultural Resources Inventory Results

Site Number	Site Type	Eligibility
48SH1698	Prehistoric & Historic Site	Unevaluated
48SH1699	Prehistoric & Historic Site	Unevaluated
48SH1700	Historic Site	NE
48SH1701	Historic Site	NE
48SH1702	Historic Site	NE

Site Number	Site Type	Eligibility
48SH1725	Historic Site	NE
48SH1726	Prehistoric & Historic Site	E
08-12-IF1	Isolated Resource	NE
08-12-IR2	Isolated Resource	NE
08-12-IR3	Isolated Resource	NE
02-12-IR4	Isolated Resource	NE
08-12-IR5	Isolated Resource	NE
08-12-IF6	Isolated Resource	NE
08-12-IF7	Isolated Resource	NE
08-12-IR8	Isolated Resource	NE
08-12-IF9	Isolated Resource	NE
08-12-IR10	Isolated Resource	NE
08-12-IR11	Isolated Resource	NE
08-12-IF12	Isolated Resource	NE
08-12-IR13	Isolated Resource	NE
08-12-IF14	Isolated Resource	NE

3.7. 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 [NOx]) 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;
- NOx, particulate matter, and other emissions from diesel trains and,
- SO2 and NOx 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

For a discussion of Alternatives A and B environmental consequences see Powder River Basin Oil and Gas Project Final Environmental Impact Statement (WY-070-02-065). This section describes the environmental consequences of the proposed action, Alternative B. Alternative C is the approved Alternative; however, analyzing the proposed action will demonstrate the greater effect to the environment. The effects analysis addresses the direct and indirect effects of implementing the proposed action, the cumulative effects of the proposed action combined with reasonably foreseeable Federal and non-federal actions, identifies and analyzes mitigation measures (COAs), and discloses any residual effects remaining following mitigation.

4.1. Alternative B

4.1.1. Soils Direct and Indirect Effects

The impacts listed below, singly or in combination, would increase the potential for valuable soil loss due to increased water and wind erosion, invasive plant establishment, and increased sedimentation and salt loads to the watershed system.

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 revegetation. 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.
- 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.
- Alteration of surface runoff characteristics.
- 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.

Direct effects to vegetation would occur from ground disturbance caused by construction of well pads, compressor stations, ancillary facilities, associated pipelines and roads. Short term effects would occur where vegetated areas are disturbed but later reclaimed within 1 to 3 years of the initial disturbance.

Long-term effects would occur where well pads, compressor stations, roads, water-handling facilities or

other semi-permanent facilities would result in loss of vegetation and prevent reclamation for the life of the project. 82% of the project area is in severe erosion potential areas and 51% is rated moderate for reclamation potential, while 49% is rated poor. There is however existing fee infrastructure that directly ties into the proposed federal development that will minimize the overall impacts.

Sagebrush does not come back easily after human disturbance such as urban or agricultural development, or even after natural occurrences such as wildfire. It takes years, maybe lifetimes, for sagebrush to fully grow back. Sagebrush still hasn't returned to some areas of the Columbia Basin burned by a large fire 40 years ago (Pacific Northwest National Laboratory Shrub Steppe Ecology Series May 2010).

4.1.1.1. Cumulative Effects

The designation of the duration of disturbance is defined in the PRB FEIS (pg 4-1 and 4-151). Most soil disturbances would be short term impacts with expedient interim reclamation and site stabilization, as committed to by the operator in their POD Surface Use Plan and as required by the BLM in COAs.

Geomorphic effects of roads and other surface disturbance range from chronic and long-term contributions of sediment into waters of the state to catastrophic effects associated with mass failures of road fill material during large storms. Roads can affect geomorphic processes primarily by: accelerating erosion from the road surface and prism itself through mass failures and surface erosion processes; directly affecting stream channel structure and geometry; altering surface flow paths, leading to diversion or extension of channels onto previously unchannelized portions of the landscape; and causing interactions among water, sediment, and debris at road-stream crossings.

These impacts, singly or in combination, could 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.

4.1.1.2. Mitigation Measures

- Impacts to soils and vegetation from surface disturbance will be reduced by following the BLM applied mitigation. Required, interim and final reclamation practices will help stabilize the disturbed areas and start to return desired vegetation in 1 to 3 years.
 1. Due to poor reclamation potential, disturbance and topography, the following wells and infrastructure, will be stabilized during and within 30 days of the start of construction: Gibbs 1-1, Odegard 11-12 and the Federal 15-12.
 2. Roads with grades 8% or more will be surfaced with gravel.
 3. 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.
- 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.
- Compaction would be remediated by plowing or ripping.

4.1.1.3. Residual Effects

Residual Effects were also identified in the PRB FEIS at page 4-408 such as the loss of vegetative cover, despite expedient reclamation, for several years until reclamation is successfully established.

4.1.2. Invasive Species

4.1.2.1. Direct and Indirect Effects

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.

4.1.2.2. Cumulative Effects

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 and perennial pepperweed.

4.1.2.3. Mitigation Measures

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):

1. Control Methods include physical, biological, and chemical methods:
Physical methods include mowing during the first season of establishment, prior to seed formation, and hand pulling of weeds (for small or new infestations). Biological methods include the use of domestic animals, or approved biological agents. Chemical methods include the use of herbicides, done in accordance with the existing Surface Use Agreement with the private surface owner.
2. Preventive practices:
Certified weed-free seed mixtures will be used for re-seeding, and vehicles and equipment will be washed before leaving areas of known noxious weed infestations.
3. Education:
The company will provide periodic weed education and awareness programs for its employees and contractors through the county weed districts and federal agencies. Field employees and contractors will be notified of known noxious weeds or weeds of concern in the project area.

4.1.2.4. Residual Effects

Control efforts by the operator are limited to the surface disturbance associated the implementation of the project. Cheat grass and other invasive species that are present within non-physically disturbed areas of the project area are anticipated to continue to spread unless control efforts are expanded. Cheatgrass and to a lesser extent, Japanese brome (*B. japonicus*) are found in such high densities and numerous locations throughout NE Wyoming that a control program is not considered feasible at this time; these annual bromes would continue to be found within the project area.

4.1.3. Wildlife

4.1.3.1. Threatened, Endangered, Proposed and Candidate Species

4.1.3.1.1. Threatened and Endangered Species

Potential project effects on Threatened and Endangered Species were analyzed and a summary is provided in Table 4.1.

Table 4.1 Summary of Threatened, Endangered, Candidate and Proposed 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.	NP	NE	No suitable habitat present.
Blowout penstemon (<i>Penstemon haydenii</i>)	Sparsely vegetated, shifting sand dunes	NP	NE	No suitable habitat present.
<i>Threatened</i>				
Ute ladies'-tresses orchid (<i>Spiranthes diluvialis</i>)	Riparian areas with permanent water	NS	NE	Potential habitat in Powder River bed.
<i>Proposed</i>				
Mountain plover (<i>Charadrius montanus</i>)	Short-grass prairie with slopes < 5%	NS	NLJ	May impact individuals only.
<i>Candidate</i>				
Greater sage-grouse (<i>Centrocercus urophasianus</i>)	Basin-prairie shrub, mountain-foothill shrub	K	MIIH	Sagebrush cover will be affected. Human presence and traffic will increase. Overhead power will be present.
<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 LAA - Likely to adversely affect MIIH - 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. NE - No Effect NLAA - May Affect, not likely to adversely affect individuals or habitat. NLJ - Not likely to jeopardize species existence.</p>				

4.1.3.1.2. Candidate Species

4.1.3.1.2.1. Greater Sage-grouse

4.1.3.1.2.1.1. Direct and Indirect Effects

Impacts to sage-grouse associated with energy development are discussed in detail in the *12-Month Findings for Petitions to List the Greater Sage-Grouse (Centrocercus urophasianus) as Threatened or Endangered* (USFWS 2010). Impacts to sage-grouse are generally a result of loss and fragmentation of sagebrush habitats associated with roads and infrastructure. Research indicates that sage-grouse hens also avoid nesting in developed areas.

There are 17 coalbed methane wells proposed for development in the Westway POD. Of these 5 are proposed in modeled high quality sage-grouse habitat with a total loss of approximately one acre of sagebrush cover. Each well will require human presence for operation and maintenance on a regular basis

throughout the life of the project which will disrupt normal activities of any sage-grouse that are present. In addition to the wells, approximately 10.2 miles of road access and utility corridor will be constructed for the project of which approximately 4.09 miles, or approximately 9.6 acres, is in high quality habitat.

There will be approximately 0.87 miles of new overhead power in modeled high quality habitat rendering it less suitable for sage-grouse. Two of the proposed reservoirs are adjacent to suitable habitat and increase the potential for West Nile Virus infection in local sage-grouse. The reservoirs may cause expansion of mammalian predator range into the area.

4.1.3.1.2.1.2. 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 the project area and the area that is encompassed by a four mile radius around the 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 (WGFD 2008b). Figure 3 illustrates a ten-year cycle of periodic highs and lows. Each subsequent population peak is lower than the previous peak. Research suggests that these declines may be a result, in part, of CBNG development, as discussed in detail in USFWS (2010).

Excluding the 17 project, there are approximately 59 proposed wells (Automated Fluid Minerals Support System [AFMSS] 6/15/10) within the cumulative effects analysis area. With the addition of these wells, well density would increase to 1.6 wells per square mile. With approval of Alternative B (17 proposed well locations) well density would increase to 2.0 wells per square mile, The approval of Alternative B, will not cause any leks to exceed the WGFD threshold category for extreme impacts.

The PRB 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 four leks that occur within four miles of the project area, and, potentially, extirpation of the local grouse population.

4.1.3.1.2.1.3. Mitigation Measures

Because of the limited amount of expected impacts to sage-grouse from actions proposed in this project, no mitigation measures were proposed for sage-grouse and no COAs will be applied.

4.1.3.1.2.1.4. Residual Effects

No further impacts are expected.

4.1.3.2. 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 4-265

4.1.3.2.1. Bald Eagle

4.1.3.2.1.1. Direct and Indirect Effects

Well drilling operations could disrupt bald eagles roosting in the cottonwood galleries along the Powder River. Operation and maintenance of wells within the Westway POD could disrupt bald eagles that may occasionally use the upland areas for foraging or daytime roosting given the proximity to the Powder River. The introduction of approximately 2 miles of overhead power, even though designed to Avian Power Line Interaction Committee standards, increases the risk electrocution to any bald eagle foraging in the area.

4.1.3.2.1.2. Cumulative Effects

The cumulative effects for bald eagles associated with alternative B are described in the PRB FEIS 9pp. 4-241 to 4-253).

4.1.3.2.1.3. Mitigation Measures

Timing limitations from Nov. 1 – April 1 annually within one mile from the Powder River will reduce eliminate disturbance to wintering bald eagles.

4.1.3.2.1.4. Residual Effects

The electrocution risk from the proposed overhead powerline will remain even with “raptor safe” design.

4.1.3.2.2. Brewer’s Sparrow, Loggerhead Shrike, and Sage Thrasher

4.1.3.2.2.1. Direct and Indirect Effects

The PRB FEIS discusses impacts to sensitive species on pp. 4-257 to 4-273. Expected project impacts to Brewer’s sparrows are discussed in the Migratory Bird section to follow.

4.1.3.2.2.2. Cumulative Effects

The PRB FEIS discusses impacts to sensitive species on pp. 4-257 to 4-273.

4.1.3.2.2.3. Mitigation Measures

No further mitigation measure applied.

4.1.3.2.2.4. Residual Effects

None identified.

4.1.3.2.3. Western Burrowing Owl

4.1.3.2.3.1. Direct and Indirect Effects

The PRB FEIS discusses impacts to sensitive species on pp. 4-257 to 4-273. Use of roads and pipeline corridors may increase owl vulnerability to vehicle collision.

4.1.3.2.3.2. Cumulative Effects

The PRB FEIS discusses impacts to sensitive species on pp. 4-257 to 4-273.

4.1.3.2.3.3. Mitigation Measures

No further mitigation measure applied.

4.1.3.2.3.4. Residual Effects

None identified.

4.1.3.2.4. Fringed Myotis and Long-eared Myotis

4.1.3.2.4.1. Direct and Indirect Effects

The PRB FEIS discusses impacts to sensitive species on pp. 4-257 to 4-273.

4.1.3.2.4.2. Cumulative Effects

The PRB FEIS discusses impacts to sensitive species on pp. 4-257 to 4-273.

4.1.3.2.4.3. Mitigation Measures

No further mitigation measure applied.

4.1.3.2.4.4. Residual Effects

None identified.

4.1.3.3. Big Game

4.1.3.3.1. Direct and Indirect Effects

Under Alternative B winter yearlong range for mule deer and yearlong range for pronghorn would be directly impacted by the construction of 17 wells; approximately 10.2 miles of new roads, approximately 2.4 miles of new pipelines outside of roads, 2 miles of overhead power, and increased vehicle traffic on established roads. This project infrastructure would result in 0.14 square miles of disturbance distributed within a 3.2 square mile POD boundary.

In addition to the direct habitat loss and potential vehicle collisions big game would likely be displaced from the project area during drilling and construction (Hiatt and Baker 198). Further information regarding direct and indirect effects to big game is provided in the PRB FEIS on pp. 4-181 to 4-215.

The amount of anticipated big game habitat disturbance warrants effective reclamation efforts designed to facilitate re-establishment of diverse plant community assemblages including sagebrush, grass, and food-forbs.

4.1.3.3.2. Cumulative Effects

The cumulative effects associated with Alternative B are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, refer to the PRB FEIS, pg. 4-181 to 4-215.

4.1.3.3.3. Mitigation Measures

No further mitigation measure applied.

4.1.3.3.4. Residual Impacts

While big game animals are expected to return to the project area following construction, continued human-caused disturbance associated with operation and maintenance may result in reduced local populations because big game may fail to habituate to the new disturbances (Lustig 2003). Habitat effectiveness for big game is anticipated to be reduced in the project area.

4.1.3.4. Aquatics

4.1.3.4.1. Direct and Indirect Effects

It is proposed that the water produced from the 17 wells will be discharged into 5 proposed stock Reservoirs through 4 proposed outfall locations and to 6 proposed and 3 existing stock tanks. It is also proposed that water will be directly discharged into the Powder River based on an assimilative credits

program through the Wyoming Dept. of Environmental Quality which will reduce the impact on the aquatic system...

4.1.3.4.2. Cumulative Effects

The cumulative effects associated with Alternative B 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).

4.1.3.4.3. Mitigation Measures

No further mitigation measure applied.

4.1.3.4.4. Residual Impacts

Impacts to the Aquatic system will be minimal.

4.1.3.5. Migratory Birds

4.1.3.5.1. 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. 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.

4.1.3.5.2. Cumulative Effects

The cumulative effects associated with Alternative B 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.

4.1.3.5.3. Mitigation Measures

No additional mitigation measures are required.

4.1.3.5.4. Residual Effects

Where timing limitations are not applied and migratory bird species are nesting, migratory birds remain vulnerable to disturbance from activities during nesting season.

4.1.3.6. Raptors

4.1.3.6.1. 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 infrastructures 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.

Nest # 3631 is a cliff nest that has been occupied by golden eagles in 2009 and 2010. Three wells proposed in the Westway POD, the Gibbs FED. 7-1-55-77, 5-1-55-77, and 11-1-55-77 are within ½ mile of the nest and in direct line-of-sight. Another well, the Gibbs FED. 3-1-55-77 is approximately 0.28 miles to the north of the nest and is out of line-of-sight. During the onsite visits alternative locations were selected for the 5-1 and 7-1 wells in an attempt to get them out of line-of sight. The 7-1 well was dropped because of its close proximity to the nest. The BLM biologist consulted with the U. S. Fish & Wildlife Service who recommended that wells within ½ miles of this nest not constructed. An increase in human activity during well operation and maintenance may cause abandonment of the nest site by golden eagles.

It is recommended that approval of these four wells be deferred until suitable alternative can be evaluated.

Nest # 8454 is a cavity in a rock outcrop that has been reported as an American kestrel nest. The nest location is well hidden in a canyon and is well protected from the closest proposed well location (Odegard FED. 9-11-55-77).

Nest 8457, is in a canyon north of the existing access road/proposed corridor and in close proximity (less than ¼ mile) from well Odegard FED. 13-12-55-77. The access route to the well was moved at the onsite to remove it from line-of-sight. The well and access corridor are out of line-of-sight. Even with the mitigation efforts well operation and maintenance activities may be a disturbance to the nest location.

Nest 10788 is in a tree in a drainage near proposed well Odegard FED. 7-12-55-77. The original well location was across the drainage in direct line-of-sight of the nest. It has been moved to a location further from the nest near the main road and is out of line-of-sight. Even with the mitigation efforts well operation and maintenance activities may be a disturbance to the nest location.

Table 4.2 Proposed and existing infrastructure within 0.5 mile of documented raptor nests within the Westway project area.

BLM ID	Infrastructure
3631	<ul style="list-style-type: none"> Wells 1-1, 3-1, 5-1, 7-1, and 11-1 and their access/utility corridors
8454	<ul style="list-style-type: none"> Wells 9-11, 11-12, 13-12, 15-12, their access/utility corridors, reservoirs 9-11 and 9-12, and overhead power
8457	<ul style="list-style-type: none"> Wells 13-12, 11-12, 15-12, their access/utility corridors, reservoir 9-11, and overhead power
8459	<ul style="list-style-type: none"> Wells 11-12, 13-12, 15-12, their access/utility corridors, and overhead power
8460	<ul style="list-style-type: none"> Wells 11-12, 13-12, 15-12, their access/utility corridors, and overhead power
10788	<ul style="list-style-type: none"> Wells 3-12, 5-12, 7-12, 9-12, their access/utility corridors, reservoir 6-12, and overhead power.

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

4.1.3.6.2. Cumulative Effects

The cumulative effects associated with Alternatives B 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.

4.1.3.6.3. Mitigation Measures

Surveys during the nesting season and application of timing restrictions for active nests will protect nesting raptors during drilling and construction.

4.1.3.6.4. Residual Impacts

Operations and maintenance may impact the nests described above.

4.1.3.7. Plains Sharp-tailed Grouse Effects

4.1.3.7.1. Direct and Indirect Effects

The impacts to sharp-tailed grouse are similar to impacts described for sage-grouse.

4.1.3.7.2. Cumulative Effects

The cumulative effects associated with Alternatives B are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, refer to the PRB FEIS, pg. 4-225-6.

4.1.3.7.3. Mitigation Measures

No further mitigation measures are required.

4.1.3.7.4. Residual Impacts

The impacts to sharp-tailed grouse are expected to be similar to those for sage-grouse.

4.1.4. 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.

Produced water from the Westway Federal POD will be discharged into any of the five (5) proposed stock reservoirs shown in the table above through four (4) proposed outfall locations for total containment. In addition, J.M. Huber will also discharge water through a proposed direct discharge point into the Powder River, utilizing the assimilative capacity credits program.

The maximum water production is predicted to be 10.2 gpm per well or 173.5 gpm (0.39 cubic feet per second (cfs) or 279.82 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 60,319 acre-feet in 2010 (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 0.46% of the total volume projected for 2009. This volume of produced water is also within the predicted parameters of the PRB FEIS.

4.1.4.1. Groundwater

4.1.4.1.1. Direct and Indirect Effects

The PRB FEIS predicts an infiltration rate of 40% to groundwater aquifers and coal zones in the Upper Powder River drainage area (PRB FEIS pg 4-5). For this action, it may be assumed that a maximum of 69.4 gpm will infiltrate at or near the discharge points and impoundments (111.93 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 320 to 850 feet compared to 1,191 to 1,551 feet to the Anderson, Wall, Upper Canyon, Upper Pawnee, and Upper and Lower Cook coal zones. 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 “...resaturate and repressurize the areas that were partially depressurized during operations. The amount of groundwater stored within the Wasatch - Tongue River sand and coals, and sands units above and below the coals is almost 750 million acre-feet of recoverable groundwater are (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).

4.1.4.1.2. 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).

4.1.4.1.3. Mitigation Measures

Adherence to the drilling COAs, the setting of casing at appropriate depths, following safe remedial procedures in the event of casing failure, and utilizing proper cementing procedures should protect any 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 address the potential impacts from infiltration on shallow ground water, the WDEQ has developed a guidance document, "Compliance Monitoring and Siting Requirements for Unlined Impoundments Receiving Coalbed Methane Produced Water" (November, 2008) which can be accessed on their web site. For all new WYPDES permits, the WDEQ requires that the proponent investigate the shallow groundwater at the proposed impoundment locations. Based on information received from the WDEQ, as of December 2009, approximately 2013 impoundment sites have been investigated with more than 2296 borings. Of these impoundments, 273 met the criteria to require “compliance monitoring” if constructed and used for CBNG water containment. Only 146 impoundments requiring monitoring are presently being used. As of the fourth quarter of 2009, only 21 of those monitored impoundments (14.4%) caused a change in the “Class of Use” of any parameter in the underlying aquifer water.

4.1.4.1.4. Residual Effects

As described in Chapter 3.4.1, the production of CBNG in this project area has already removed some of the water saturation in the coal zones for the production of gas. There is potential that the wells will not produce the volume of CBNG water estimated due to the dewatering history in the area.

4.1.4.2. Surface Water/Wetland/Riparian

4.1.4.2.1. Direct and Indirect Effects

Produced Water Quality

The following table shows the average values of EC and SAR as measured at selected USGS gauging stations at high and low monthly flows as well as the Wyoming groundwater quality standards for TDS and SAR for Class I to Class III water (there is no current standard for EC). It also shows constituent limits for TDS, SAR and EC detailed in the project area WYPDES Permit #WY0094277, and the concentrations found in the POD’s representative water sample.

Table 4.3 Comparison of Regulated Water Quality Parameters to Predicted Water Quality

Sample location or Standard	TDS, mg/l	SAR	EC, µmhos/cm
Upper Powder River at Arvada, WY			
Historic Data Average at Maximum Flow	-	4.76	1,797
Historic Data Average at Minimum Flow	-	7.83	3,400
WDEQ Quality Standards for Wyoming Groundwater (Chapter 8)			
Drinking Water (Class I)	500		

Sample location or Standard	TDS, mg/l	SAR	EC, µmhos/cm
Agricultural Use (Class II)	2,000	8	-
Livestock Use (Class III)	5,000		
WDEQ Water Quality Requirement for WYPDES Permit # WY0094277		VARIES	
At discharge point (Varies by discharge point)	5,000	SEE PERMIT	7,500
Predicted Produced Water Quality			
Wall Coal Zone sampled 6/11/2009	2,180	49.9	3,260
Cook Coal Zone sampled 6/25/2009	2,200	36.8	3,270

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 2,180 mg/l TDS which is not 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 Anderson, Wall, Upper Canyon, Upper Pawnee, and Upper and Lower Cook coal zones is predicted to be similar to the sample water quality collected from locations near the POD. A maximum of 10.2 gallons per minute (gpm) is projected is to be produced from these 17 wells, for a total of 173.5 gpm for the POD. See Table 4.2.

The proposed method for surface discharge provides passive treatment through the aeration supplied by the energy dissipation configuration at each discharge point outfall. Aeration adds dissolved oxygen to the produced water which can oxidize susceptible ions, which may then precipitate. This is particularly true for dissolved iron. Because iron is one of the key parameters for monitoring water quality, the precipitation of iron oxide near the discharge point will improve water quality at downstream locations.

The operator has applied for and will submit upon approval a Wyoming Pollutant Discharge Elimination System (WYPDES) permit for the discharge of water produced from this project from the WDEQ.

Permit effluent limits will vary at the discharge point (Outfalls 001-004; Outfalls 005-012 and 014; Outfall 013). The limits are described in detail within the **WYPDES Permit #WY0094277**:

Effluent	Outfalls 001-004	Outfalls 005-009, 011, 012 and 014	Outfall 010	Outfall 013
pH	6.5 to 9.0	6.5 to 9.0	6.5 to 9.0	6.5 to 9.0
TDS	Varies by month	-	-	5,000 mg/l max
Specific Conductance	7,500 micromhos/cm	7,500 micromhos/cm	7,500 micromhos/cm	7,500 micromhos/cm
Sulfates	3,000 mg/l max	-	-	-
Radium 226	1 pCi/l max	1 pCi/l max	3 pCi/l max	-
Dissolved Iron	300 µg/l max	300 µg/l max	1000 µg/l max	-
Total Barium	1,800 µg/l max	1,800 µg/l max	1,800 µg/l max	-
Total Arsenic	8.4 µg/l max	8.4 µg/l max	8.4 µg/l max	-
Chlorides	150 mg/l	150 mg/l	150 mg/l	2000 mg/l

Based upon the results of the initial monitoring, the permit may be reopened and more stringent limits and/or monitoring and reporting required. The WYPDES permit addresses existing downstream concerns, such as irrigation use, in the COA for the permit. The designated point(s) of compliance identified for this permit are:

STATION	QQ	TWN	RNG	SEC	DESCRIPTION
DPR	SENW	56	77	35	Downstream Water Quality Monitoring Station – Powder River
UPR	NENW	55	77	27	Downstream Water Quality Monitoring Station – Powder River

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. Individual coal zone samples will not likely be available since all wells are proposed to be comingled into six zones. 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.

For more information, please refer to the WMP included in this POD.

Produced Water Control

There are five (5) discharge points proposed for this project. They have been appropriately sited and utilize appropriate water energy dissipation designs. Existing and proposed water management facilities were evaluated for compliance with best management practices during the onsite.

To manage the produced water, five (5) impoundments (93.5 acre feet) would potentially be constructed within the project area. Four (4) of the five (5) outfalls will discharge to the impoundments; one outfall will directly discharge into the Powder River, utilizing the assimilative capacity credits program. The Enl. Duane (7149S) Reservoir will indirectly receive water via overflow from the Odegard 9-11-55-77 Reservoir. These on-channel impoundments will disturb approximately 11.13 acres including the dam structures. No off-channel ponds are proposed for the Westway Federal POD. Monitoring may be required based upon shallow groundwater investigations required for new impoundments by the WDEQ.

Proposed impoundments will be constructed to meet the requirements of the WSEO, WDEQ and the needs of the operator and the landowner. All water management facilities were evaluated for compliance with best management practices during the onsite.

Produced Water Quantity

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 26 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 watershed of 68 cfs (PRB FEIS pg 4-87). The predicted maximum discharge rate from these 17 wells is anticipated to be a total of 173.5 gpm or 0.39 cfs to impoundments.

Using an assumed conveyance loss of 20% (PRB FEIS pg 4-74) and full containment the produced water re-surfacing in Lynn Draw and Cross H Creek drainages from this action (0.06 cfs) may add a maximum 0.05 cfs to the Upper Powder River flows, or 0.57% of the predicted total CBNG produced water

contribution 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).

In the WMP portion of the POD, the operator provided an analysis of the potential development in the watershed above the project area (WMP, Appendix 3). Based on the area of Lynn Draw and two unnamed watersheds above the POD (3,785 acres) and an assumed density of 1 well per location every 80 acres, the potential exists for the development of 47 wells which could produce a maximum flow rate of 482.58 gpm (1.08 cfs) of water. The BLM agrees with the operator that this is not expected to occur because:

1. Some of these wells have already been drilled and are producing.
2. New wells will be phased in over several years, and
3. A decline in well discharge generally occurs after several months of operation.

The potential maximum flow rate of produced water within the watershed upstream of the project area, 1.08 cfs, is much less than the volume of runoff estimated from the 2-year storm event for Lynn Draw and the two unnamed watersheds within the POD (110.7 cfs) which is 0.97% of the predicted total CBNG produced water contribution. See Appendix 3 of the WMP.

Springs/Wetlands/Riparian Areas

Re-surfacing water from the impoundments will potentially allow for wetland-riparian species establishment. Continuous high stream flows into wetlands and riparian areas would change the composition of species and dynamics of the food web. The shallow groundwater table would rise closer to the surface with increased and continuous stream flows augmented by produced water discharges.

Vegetation in riparian areas, such as cottonwood trees, that cannot tolerate year-round inundated root zones would die and would not be replaced. Other plant species in riparian areas and wetland edges that favor inundated root zones would flourish, thus changing the plant community composition and the associated animal species. A rise in the shallow ground groundwater table would also influence the hydrology of wetlands by reducing or eliminating the seasonal drying periods that affect recruitment of plant species and species composition of benthic and water column invertebrates. These changes to the aquatic food web base would affect the higher trophic levels of fish and waterfowl abundance and species richness for wetlands and riparian areas.” (PRB FEIS Page 4-175).

In-channel downstream impacts are addressed in the WMP for the Westway Federal POD prepared by Wood Group Production Services for J.M. Huber Corporation. Proposed roads will use culverts to cross the ephemeral unnamed drainage of Lynn Draw and Cross H Creek drainages. The sizing of each culvert will meet the BLM Road Standards Manual Section 9113. Where utility lines cross drainages they will be placed 5-10 feet from the downstream end of the culvert, and perpendicular to the channel to reduce erosion. No headcut features will be affected by produced water discharges. Headcut #1 in the NENE of S1, T55N R77W, below the proposed 1-11-55-77 Stock Reservoir, will be repaired during the construction of the reservoir. See Section F – Facility Design, of the WMP for more information and details on downstream concerns.

4.1.4.2.2. Cumulative Effects

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

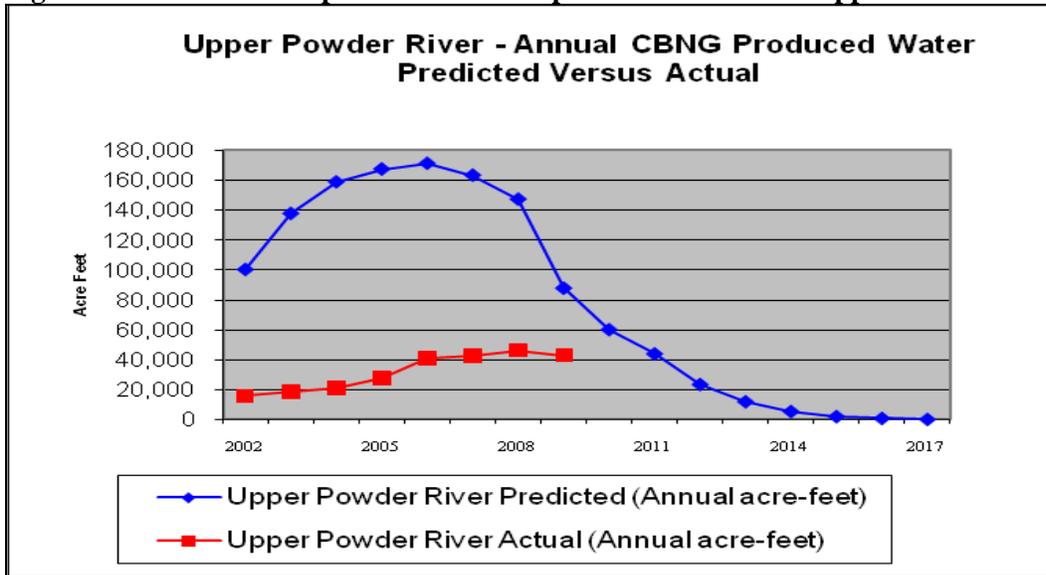
As of December 2009, all producing CBNG wells in the Upper Powder River watershed have discharged a cumulative volume of 255,531 acre-ft of water compared to the predicted 1,135,567 acre-ft disclosed in the PRB FEIS (Table 2-8 pages 2-26). These figures are presented graphically in Figure 4.1 and Table

4.4 following. This volume is 22.5 % of the total predicted produced water analyzed in the PRB FEIS for the Upper Powder River watershed.

Table 4.4 Actual vs. predicted water production in the Upper Powder River watershed 2009 Data Update 04-06-10

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	43,009	48.8	255,531	22.5
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		255,531			

Figure 4.1 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.

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 Upper Powder River drainage, which is approximately 22.5% 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 manage the volume of water discharged.

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.

4.1.4.2.3. Mitigation Measures

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. Channel crossings by pipelines will be constructed so that the pipe is buried at least four feet below the channel bottom.

The operator has committed to monitor the water discharge points and the channels downstream for stability. If erosion is noted, the operator will be required to repair and stabilize the area using selected mitigation techniques.

The operator has also committed to expediently stabilize and revegetate disturbance within channel and floodplain associated with this project.

4.1.4.2.4. Residual Effects

“Streams enhanced by large volumes of CBM produced water may begin to establish meander patterns on longer wavelengths in response to increased flows. Stream drainages would readjust to their existing natural flows at the end of the project’s life. Downcutting (stream erosion) and sediment deposition (aggradation) are natural processes that occur as stream drainages age through time. Downcutting occurs within the upper reaches of a drainage system as the stream channel becomes incised through erosion, until the slope of the stream and its velocity are reduced and further erosion is limited. Sediment is deposited within the lower, slower reaches of a stream.

Surface drainages could be degraded from erosion caused by increased surface flow, unless rates of CBM discharge and outfall locations are carefully controlled. Increased flows could cause downcutting in fluvial environments, resulting in increased channel capacity over time within the upper and middle reaches of surface drainages.” (PRB FEIS pg 4-118).

There will be changes to wetland and riparian areas through alterations in volume, velocity, timing and quality of the stream flow due to direct discharge. Turbidity and solids loading in the streams would probably increase due to erosion of project disturbed areas and sediment transport to the associated drainages. These impacts would be mitigated by expediently stabilizing the disturbance and reducing the amount of sediment reaching the streams.

4.1.5. Cultural Resources

4.1.5.1. Direct and Indirect Effects

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 7/7/2010 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).

4.1.5.2. Cumulative Effects

The cumulative effects associated with Alternatives C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, refer to the PRB FEIS, pg. 4-298.

4.1.5.3. Mitigation Measures

When a project is constructed in an area with a high potential for buried cultural material, archaeological monitoring is often included as a condition of approval. Construction monitoring is performed by a qualified archeologist working in unison with construction crews. If buried cultural resources are located by the archeologist, construction is halted and the BLM consults with the State Historic Preservation Office (SHPO) on mitigation or avoidance. Due to the presence of alluvial deposits and the presence of heavy vegetation that prevented an adequate Class III inventory, the operator will be required to have an archeologist monitor all earth moving activities associated with certain construction, as described in the site specific COA’s.

4.1.5.4. Residual Effects

During the construction phase, there will be numerous crews working across the project area using heavy construction equipment without the presence of archaeological monitors. Due to the extent of work and the surface disturbance caused by large vehicles, it is possible that unidentified cultural resources can be

damaged by construction activities. The increased human presence associated with the construction phase can also lead to unauthorized collection of artifacts or vandalism of historic properties.

4.1.6. Air Quality

4.1.6.1. Direct and Indirect Effects

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.

4.1.7. Comparison Summary of Effects By Cumulative effects

Table 4.5 provides a comparison of the cumulative effects associated with the alternatives.

Table 4.5 Cumulative Effects

Resource/Species	Alternative A	Alternative B	Alternative C
Wetlands/Riparian Areas	No existing wetlands/riparian areas would be disturbed.	No existing wetlands/riparian areas would be disturbed.	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 & collision risk.	Overhead electric poses predation & collision risk.

Resource/Species	Alternative A	Alternative B	Alternative C
Threatened and Endangered Species			
Bald eagle	No habitat loss	Overhead electricity increasing mortality risk from electrocution.	Removal of overhead electricity will eliminate risk from electrocution. Removal of proposed impoundments will reduce West Nile virus impacts to eagles and retain foraging in areas where impoundments will impact prairie dogs.
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. Eliminate collision and vertical intrusion from burying overhead power.
West Nile Virus	No Impact	No Impact	No Impact

5. CONSULTATION & COORDINATION

Contact	Title	Organization	Present at Onsite
Ray Stott	NRS	Bureau of Land Management	Yes
Don Brewer	Biologist	Bureau of Land Management	Yes
Ardeth Hahn	Archaeologist	Bureau of Land Management	Yes
Stacy Gunderson	Civil Engineer	Bureau of Land Management	Yes
Mary Hopkins	SHPO	Wyoming State Historic Preservation Office	No
Jason Koltiska	POD Agent	J.M. Huber	Yes
Jaycie Burch-Walsh	Landman	J.M. Huber	Yes
John Vaselein	Environmental Specialist	Woodgroup	Yes
Preston Anesi	Civil Engineer	Woodgroup	Yes
Doug Masters	Construction Supervisor	Woodgroup	Yes
Jim Gibbs	Landowner	Gibbs Bros, Inc.	Yes
Duane Odegard	Landowner	Odegard Land, LLC	Yes

6. 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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Appendix A. Affected Resources Worksheet

Resource	Resource Present	Resource Affected	PRB FEIS Sufficient	Notes
Air quality				PRB FEIS: 3-291-298, 4-404-406, 4-377-386
Cultural	Yes	No	No	PRB FEIS: 3-206-228, 4-273-288, 4-394
Native American religious concerns	No	No	No	PRB FEIS: 3-218-219, 3-228, 4-277-278
Traditional Cultural Properties	No	No	No	PRB FEIS: 3-218-219, 4-277-278
Mineral Potential				PRB FEIS: 3-66-70, 3-230, 4-127-129
Coal				PRB FEIS: 3-66
Fluid Minerals				PRB FEIS: 3-68-69
Locatable Minerals				Add in EA
Other leasables				
Salable minerals				
Paleontology	No	No	No	PRB FEIS: 3-65-66, 4-125-127
PFYC 3	No	No	No	PRB FEIS: 3-65-66, 4-125-127
PFYC 5	No	No	No	PRB FEIS: 3-65-66, 4-125-127
Rangeland management	No	No	No	Not in PRB FEIS
Realty	No	No	No	
Recreation	No	No	No	PRB FEIS: 3-263-273, 4-319-328
Developed site	No	No	No	PRB FEIS: 3-266, 4-326
Walk-in-Area	No	No	No	
Social & Economic	Yes	Yes	Yes	PRB FEIS: 3-275-289, 4-336-370
Soils & Vegetation	Yes	Yes	Yes	PRB FEIS: 3-78-107, 4-134-152, 4-153-164, 4-393-394, 4-406
Erosion Hazard	Yes	Yes	No	PRB FEIS: 3-82, 4-135
Poor Reclamation Potential	Yes	Yes	No	PRB FEIS: 3-86, 4-149-152
Slope hazard	Yes	No		PRB FEIS: 3-81, 4-135
Forest products	No	No	No	
Invasive Species				PRB FEIS: 3-103-108, 4-153-172
Wetlands/Riparian	No	No		PRB FEIS: 4-117-124, 3-108-113, 4-172-178, 4-406
Special Designations				
Proposed ACEC	No	No		
Wild & Scenic River	No	No		PRB FEIS: 3-273
Wilderness Characteristics/Citizen Proposed	No	No		
WSA	No	No		
Visual Resources				PRB FEIS: 3-252-263, 4-302-314, 4-403
Class II	No	No		
Class III	No	No		
Water	Yes	Yes		PRB FEIS: 3-1-56, 4-1-122, 4-135, 4-33, 4-405
Floodplains	Yes	No		

Resource	Resource Present	Resource Affected	PRB FEIS Sufficient	Notes
Ground water	Yes	Yes		PRB FEIS: 3-1-30, 4-1-69, 4-392, 4-405
Surface water	Yes	Yes		PRB FEIS: 4-85-86, 4-117-124, 3-36-56. 4-69-122, 4-393, 4-405
Drinking water	No	No		PRB FEIS: 3-52, 4-50-52
Wildland Urban Interface				
Wildlife				PRB FEIS: 3-113-153, 4-179, 4-247, 4-397
ESA listed, proposed, or candidate species	Yes	Yes	Yes	Sage grouse habitat will be impacted.
BLM sensitive species	Yes	Yes	Yes	Bald eagle winter roost habitat on Powder River.
General wildlife	Yes	Yes	Yes	Big game, raptors present.
West Nile virus potential	No	No		

Threatened, Endangered, Proposed, and Candidate Species Worksheet

Common Name	Habitat	Habitat Present?	Individuals Present?	Direct Impacts Anticipated?	Impacts anticipated beyond the level analyzed within the PRB FEIS?
<i>Endangered</i>					
Black-footed ferret	Black-tailed prairie dog colonies or complexes > 1,000 acres.	No	No	No	PRB FEIS 4-251 & BA
Blowout penstemon	Sparsely vegetated, shifting sand dunes	No	No	No	Not in PRB FEIS
<i>Threatened</i>					
Ute ladies' -tresses orchid	Riparian areas with permanent water	Potential	No	No	PRB FEIS 4-253 & BA
<i>Proposed</i>					
<i>Candidate</i>					
Greater sage-grouse	Basin-prairie shrub, mountain-foothill shrub	Yes	Yes	Yes	PRB FEIS 4-257 to 4-273

Sensitive Species worksheet

Common Name	Habitat	Habitat Present?	Individuals Present?	Direct Impacts Anticipated?	Impacts anticipated beyond the level analyzed within the PRB FEIS?
<i>Amphibians</i>					PRB FEIS 4-258
Northern leopard frog	Beaver ponds and cattail marshes from plains to montane zones.	Yes	Possible	Yes	
Columbia spotted frog	Ponds, sloughs, small streams, and cattails in foothills and montane zones. Confined to headwaters of the S Tongue R drainage and tributaries.	No	No	No	
<i>Fish</i>					PRB FEIS 4-259 & 4-260
Yellowstone cutthroat trout	Cold-water rivers, creeks, beaver ponds, and large lakes in the Upper Tongue sub-watershed	No	No	No	
<i>Birds</i>					PRB FEIS 4-260 to 4-264
Baird's sparrow	Shortgrass prairie and basin-prairie shrubland habitats; plowed and stubble fields; grazed pastures; dry lakebeds; and other sparse, bare, dry ground.	No	No	No	
Bald eagle	Mature forest cover often within one mile of large water body with reliable prey source nearby.	Yes	Yes	Yes	PRB FEIS 4-251 to 4-253 & BA
Brewer's sparrow	Sagebrush shrubland	Yes	Suspected	Yes	
Ferruginous hawk	Basin-prairie shrub, grasslands, rock outcrops	No	No	No	
Loggerhead shrike	Basin-prairie shrub, mountain-foothill shrub	Yes	Suspected	Yes	
Long-billed curlew	Grasslands, plains, foothills, wet meadows	No	No	No	
Mountain plover	Short-grass prairie with slopes < 5%	Marginal	Not suspected	No	PRB FEIS 4-254, 4-255 & BA
Northern goshawk	Conifer and deciduous forests	No	No	No	
Peregrine falcon	Cliffs	No	No	No	
Sage sparrow	Basin-prairie shrub, mountain-foothill shrub	Yes	Not suspected	No	

Common Name	Habitat	Habitat Present?	Individuals Present?	Direct Impacts Anticipated?	Impacts anticipated beyond the level analyzed within the PRB FEIS?
Sage thrasher	Basin-prairie shrub, mountain-foothill shrub	Yes	Possible	No	
Trumpeter swan	Lakes, ponds, rivers	No	No	No	
Western Burrowing owl	Grasslands, basin-prairie shrub	Yes	Suspected	No	
White-faced ibis	Marshes, wet meadows	Yes	Possible	No	
Yellow-billed cuckoo	Open woodlands, streamside willow and alder groves	Yes	Possible	No	
<i>Mammals</i>					PRB FEIS 4-264 & 4-265
Black-tailed prairie dog	Prairie habitats with deep, firm soils and slopes less than 10 degrees.	Yes	No	No	PRB FEIS
Fringed myotis	Conifer forests, woodland chaparral, caves and mines	Yes	Suspected	Yes	
Long-eared myotis	Conifer and deciduous forest, caves and mines	Yes	Suspected	Yes	
Spotted bat	Cliffs over perennial water.	No	No	No	
Swift fox	Grasslands	No	No	No	
Townsend's big-eared bat	Caves and mines.	No	No	No	
<i>Plants</i>					PRB FEIS 4-258
Limber pine	Mountains, associated with high elevation conifer species	No	No	No	
Porter's sagebrush	Sparsely vegetated badlands of ashy or tuffaceous mudstone and clay slopes 5300-6500 ft.	No	No	No	
William's wafer parsnip	Open ridgetops and upper slopes with exposed limestone outcrops or rockslides, 6000-8300 ft.	No	No	No	