

Modified DECISION RECORD
Denbury Onshore, LLC, Denbury HD 2014
Environmental Assessment (EA), WY-070-14-188
Bureau of Land Management, Buffalo Field Office, Wyoming

DECISION. The BLM approves Denbury Onshore, LLC’s (Denbury) Denbury HD 2014 gas and oil well applications for permit to drill (APDs) found in Alternative B of the Environmental Assessment (EA) WY-070-EA14-188, all incorporated here by reference. This approval includes the wells’ support facilities. This Modified Decision Record incorporates by reference the administrative record (AR), the EA, WY-070-14-188, it’s finding, decision record, conditions of approval (COAs), and recommended mitigation measures (RMMs). This Modified Decision Record renders a decision on 2 APDs for which BLM deferred a decision; see, Comment or New Information Summary, below. This Modified Decision Record, replaces the project’s Decision Record dated May 22, 2014, and Appendix A, COAs for a Conventional Application for Permit to Drill, with this Modified Decision Record and Appendix A, Modified COAs for a Conventional Application for Permit to Drill.

Compliance. This decision complies with or supports:

- Federal Land Policy and Management Act of 1976 (FLPMA) (43 USC 1701); DOI Order 3310.
- Mineral Leasing Act of 1920 (MLA) (30 U.S.C. 181); including the Onshore Oil and Gas Orders.
- National Environmental Policy Act of 1969 (NEPA) (42 USC 4321).
- National Historic Preservation Act of 1966 (NHPA) (16 USC 470).
- Buffalo and Powder River Basin Final Environmental Impact Statements (FEISs), 1985, 2003, 2011.
- Buffalo Resource Management Plan (RMP) 1985 and Amendments.

Consultation.

- BLM Washington Office Instruction Memorandum No. 2009-078, Processing Oil and Gas Application for Permit to Drill for Directional Drilling into Federal Mineral Estate from Multiple-Well Pads on Non-Federal Surface and Mineral Locations, 2009.
- Wyoming BLM State Director Review, SDR No. WY-2011-010, EOG Resources, Inc. v. Pinedale Field Office, 2011.

BLM summarizes the details of the approval of Alternative B, below. The EA includes the project description, including specific changes made at the onsite, and site-specific mitigation measures.

Wells BLM approves 5 APDs and support facilities:

Well Name & Number	Qtr	Sec	T N	R W	Lease	AFMSS Lease
DENBURY HD 2014 HDU 4135H*	SWNW	13	44	75	WYW42608	Same
DENBURY HD 2014 HDU 4157H	SWSW	15	44	75	WYW39178	Same
DENBURY HD 2014 HDU 5013H	NWSW	1	45	76	Fee	WYW48009
DENBURY HD 2014 HDU 5126H*	SENE	12	45	76	WYW51704	Same
DENBURY HD 2014 HDU 6332H	NWNE	33	46	76	Fee	WYW18925A

*Deferred in original approval; see, Comment or New Information Summary, below.

THE FINDING OF NO SIGNIFICANT IMPACT (FONSI). Analysis of Alternative B of the EA, WY-070-14-188, and the FONSI (incorporated here by reference) found that Denbury’s proposal for the Denbury HD 2014 POD will have no significant impacts on the human environment, beyond those described in the PRB FEIS. This site-specific analysis tiers into and incorporates by reference the information and analysis in the Final Environmental Impact Statement and Proposed Plan Amendment for the Powder River Basin Oil and Gas Project (PRB FEIS), WY-070-02-065, 2003, 2011 as well as the

NEPA analyses listed in the table below, which found no significant impacts to the environment. There is no requirement for an EIS. The absence of applying the recommended mitigation measures may cause some effects such as increased erosion; yet proposal effects will not have a significant impact on the human environment.

Company, Project Name	NEPA Analyses: WY-070-	Approved	Location	Wells Appv'd	Wells Drilled	Type
Anadarko Culp Draw Deep North	CX3-14-147 to 156	02/26/2014	Northwest	10	0	H*-Oil
Anadarko Crazy Cat East	EA13-028	11/27/2012	Adjacent	36	0	H*-Oil
Williams Wormwood Unit 2	EA11-056	12/11/2010	Adjacent	27	27	CBNG
Anadarko Table Mountain Ph 2	EA10-376	09/30/2010	Overlying 6332H	83	5	CBNG
XTO Oil Addition	EA10-046	06/30/2010	Adjacent	10	0	Oil
Williams Hartzog Draw R Christensen	EA10-121	05/27/2010	Overlying 6332H	30	1	CBNG
Williams Culp Draw_Hartzog Draw	EA10-121	05/27/2010	Overlying 6332H	27	1	CBNG
XTO HD 3	EA07-174	09/10/2007	Overlying 5013H and 5126H	50	48	CBNG
XTO HD 2	EA7-011	02/11/2007	Adjacent	50	49	CBNG
Anadarko Savageton 3 & 4	EA06-192	08/25/2006	Overlying 4135H and 4157H	47	39	CBNG
XTO HD Federal	EA05-358	11/23/2005	Overlying 4135H and 4157H	52	51	CBNG
XTO HDU Federal	EA05-250	11/22/2005	Adjacent	16	6	Oil
Bill Barrett Hartzog Draw	EA05-296	11/15/2005	Adjacent	34	34	CBNG

* Horizontal Well project.

COMMENT OR NEW INFORMATION SUMMARY. BLM publically posted the APDs for 30 days, received no comments, and then internally scoped them. Since receipt of these APDs BLM received no new or clarified policies appropriate to processing these APDs. BLM approved the originally deferred 2 APDs after Denbury submitted a surface damage bond, per 43 CFR 3814.1, (Form 3160-19) in lieu of a valid surface access agreement (SAA) for each well. Denbury submitted the bonds to the BLM Wyoming State Office (WSO) April 2, 2014. The WSO notified the surface owners as of April 29, 2014. The surface owners have 30 days to protest the amount of the bond to the WSO. The NEPA analysis is complete for all the wells in the project, however, the approval for these 2 APDs was deferred until the surface owner protest period lapsed, and the non-contested bonds were in place. The bonds were accepted on June 30, 2014. The APDs are approved as of July 1, 2014. The modified conditions of approval (MCOAs – Appendix 1)) apply to the 3 wells as listed in the MCOAs.

DECISION RATIONALE. BLM bases the decision authorizing the selected project on:

1. BLM and Denbury included mitigation measures to reduce environmental impacts while meeting the BLM's need. For a complete description of all site-specific COAs, see the COAs. The PRB FEIS analyzed and predicted that the PRB oil and gas development would have significant impacts to the region's Greater Sage-Grouse (GSG) population. The impact of this development cumulatively contributes to the potential for local GSG extirpation yet its effect is acceptable because it is outside priority habitats and is within the parameters of the PRB FEIS and ROD and current BLM and Wyoming GSG conservation strategies.
2. To reduce the likelihood of a "take" under the Migratory Bird Treaty Act, BLM sensitive species nesting habitat removal for those locations and infrastructure on federal surface or mineral estate will occur outside of the breeding season or be cleared by survey – applicable to pad: DENBURY HD 2014 HDU 4157H and its associated infrastructure.

3. BLM incorporates here in the decision rationale, the above Comment or New Information Summary.
4. BLM considers the access to the 2 wells located on private surface over private leases (5013H and 6332H) is guaranteed under the Unit Agreement or Unit Operating Agreement for the Hartzog Draw Unit Area, July 16, 1980. BLM informally, verbally received solicitor office opinion to resolve the access question outside of having a SAA or timely posted bond for these 2 wells (5013H and 6332H). A contingent condition of approval is included that will insure continued access if the unit is dissolved or altered.
5. Denbury will conduct operations to minimize adverse effects to surface and subsurface resources, prevent unnecessary surface disturbance, and conform to currently available technology and practice.
6. The selected alternative will help meet the nation's energy needs, and help stimulate local economies by maintaining workforce stability.
7. The operator has or has committed to:
 - Comply with the approved APDs, applicable laws, regulations, orders, and notices to lessees.
 - Obtain necessary permits from agencies.
 - Has offered water well agreements to the owners of record for permitted wells.
 - Incorporate several measures to alleviate resource impacts into their submitted surface use plan and drilling plan.
8. The operator certified it has a surface access agreement or posted a surface damage bond in accordance with 43 CFR 3814.1 – see above.
9. The project is clearly lacking in wilderness characteristics because it lacks federal surface.
10. These APDs are pursuant to the Mineral Leasing Act for developing oil or gas and do not satisfy the categorical exclusion directive of the Energy Policy Act of 2005, Section 390 because of the age of the existing NEPA analyses as well as the potential for this analysis to serve as a baseline for additional future development.

ADMINISTRATIVE REVIEW AND APPEAL. This decision is subject to administrative review according to 43 CFR 3165. 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. Parties 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: /s/ Duane W. Spencer

Date: 7/3/14

FINDING OF NO SIGNIFICANT IMPACT
Denbury Onshore, LLC, Denbury HD 2014
Environmental Assessment (EA), WY-070-14-188
Bureau of Land Management, Buffalo Field Office, Wyoming

FINDING OF NO SIGNIFICANT IMPACT (FONSI). Based on the information in the EA, WY-070-14-188, which BLM incorporates here by reference; I find that:

(1) the implementation of Alternative B will not have significant environmental impacts beyond those addressed in the Buffalo Final Environmental Impact Statement (FEIS) 1985, and the Powder River Basin (PRB) FEIS, 2003, 2011 and the documents listed in the table below to which the EA also tiers;

Company, Project Name	NEPA Analyses: WY-070-	Approved	Type
Anadarko Culp Draw Deep - North	CX3-14-147 to 156	02/26/2014	H*- Oil
Anadarko Crazy Cat East	EA13-028	11/27/2012	H* - Oil
Williams Wormwood Unit 2	EA11-056	12/11/2010	CBNG
Anadarko Table Mountain Phase 2	EA10-376	09/30/2010	CBNG
XTO Oil Addition	EA10-046	06/30/2010	Oil
Williams Hartzog Draw R Christensen	EA10-121	05/27/2010	CBNG
Williams Culp Draw_Hartzog Draw	EA10-121	05/27/2010	CBNG
XTO HD 3	EA07-174	09/10/2007	CBNG
XTO HD 2	EA7-011	02/11/2007	CBNG
Anadarko Savageton 3 & 4	EA06-192	08/25/2006	CBNG
XTO HD Federal	EA05-358	11/23/2005	CBNG
XTO HDU Federal	EA05-250	11/22/2005	Oil
Bill Barrett Hartzog Draw	EA05-296	11/15/2005	CBNG

* Horizontal well project

(2) Alternative B conforms to the Buffalo Field Office (BFO) Resource Management Plan (RMP) (1985, 2001, 2003, 2011); and (3) Alternative B does not constitute a major federal action having a significant effect on the human environment. Thus an EIS is not required. I base this finding on consideration of the Council on Environmental Quality's (CEQ) criteria for significance (40 CFR 1508.27), with regard to the context and to the intensity of the impacts described in the EA, and Interior Department Order 3310.

CONTEXT. Mineral development is a common PRB land use, sourcing over 42% of the nation's coal. The PRB FEIS foreseeable development analyzed the development of 54,200 wells. The additional development analyzed in Alternative B is insignificant in the national, regional, and local context.

INTENSITY. The implementation of Alternative B 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 included in Alternative B will minimize adverse environmental effects. The preferred alternative does not pose a significant risk to public health and safety. The geographic area of project does not contain unique characteristics identified in the 1985 RMP, PRB FEIS, or other legislative or regulatory processes. BLM used relevant scientific literature and professional expertise 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 have minor controversy, are not highly uncertain, or do not involve unique or unknown risks. The PRB FEIS predicted and analyzed oil development of the nature proposed with this project and similar projects. The selected alternative does not establish a precedent for future actions with significant effects. The proposal may relate to the PRB Greater Sage-Grouse and its habitat decline having cumulative significant impacts;

yet the small size of this project is within the parameters of the impacts in the PRB FEIS. There are no cultural or historical resources present that will be adversely affected by the selected alternative. The project area is clearly lacking in wilderness characteristics because it lacks federal surface, is surrounded by mineral development and is less than 5,000 acres. 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.

ADMINISTRATIVE REVIEW AND APPEAL. This finding is subject to administrative review according to 43 CFR 3165. Request for administrative review of this finding 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 FONSI is received or considered to have been received. Parties adversely affected by the State Director's finding may appeal that finding to the Interior Board of Land Appeals, as provided in 43 CFR 3165.4.

Field Manager: _____/s/ Duane W. Spencer_____

Date: _____5/22/14_____

ENVIRONMENTAL ASSESSMENT (EA), WY-070-EA14-188
Denbury Onshore, LLC, Denbury HD 2014 Plan of Development (POD)
Bureau of Land Management, Buffalo Field Office, Wyoming

1. INTRODUCTION

BLM provides an EA for Denbury Onshore, LLC’s (Denbury or operator) Denbury HD 2014 POD oil and gas well applications for permit to drill (APDs) which includes 5 wells. BLM’s jurisdiction for this proposal varies by well location and is defined in Table 1.1 below. All the surface locations are privately owned (fee). Three of the wells surface locations are over federal minerals. According the BLM Instruction Memorandum (IM) 2009-078, BLM has jurisdiction over the surface use, drilling and completion of these wells as for traditional split estate situations (“federal lands” via the Federal Land Management Policy Act). The other two wells are over fee mineral, but the horizontal bore will penetrate federal mineral. According to the IM, in this situation, BLM has surface jurisdiction at the well bore but not over the greater surface disturbance associated with the drilling of the wells (pad, access roads, etc.), but has jurisdiction downhole where the wellbore penetrates federal mineral for production. The Hartzog Draw Unit (HDU) area is permitted as a Secondary Recovery Unit (Case Number 89101942400).

Table 1.1. Proposed Wells

Well Name & Number	Qtr	Sec	T N	R W	Lease
DENBURY HD 2014 HDU 4135H	SWNW	13	44	75	WYW42608
DENBURY HD 2014 HDU 4157H	SWSW	15	44	75	WYW39178
DENBURY HD 2014 HDU 5013H	NWSW	1	45	76	Fee
DENBURY HD 2014 HDU 5126H	SENE	12	45	76	WYW51704
DENBURY HD 2014 HDU 6332H	NWNE	33	46	76	Fee

This site-specific analysis tiers into and incorporates by reference the information and analysis in the Final Environmental Impact Statement and Proposed Plan Amendment for the Powder River Basin Oil and Gas Project (PRB FEIS), WY-070-02-065, 2003, 2011 as well as the documents listed below in Table 1.2 Reference NEPA Analyses and the PRB FEIS Record of Decision (ROD) per 40 CFR 1508.28 and 1502.21. One may review these documents at the BLM Buffalo Field Office (BFO) and on our website: http://www.blm.gov/wy/st/en/field_offices/Buffalo.html. These APDs are pursuant to the Mineral Leasing Act for the purpose of exploring or developing oil or gas and do not satisfy the categorical exclusion directive of the Energy Policy Act of 2005, Section 390 to provide a substantial and thorough NEPA analysis as a basis for additional development in and adjacent to the unit.

Table 1.2. Reference NEPA Analyses, in Addition to the PRB FEIS.

Company, Project Name	NEPA Analyses: WY-070-	Approved	Location	Wells Appv’d	Wells Drilled	Type
Anadarko Culp Draw Deep North	CX3-14-147 to 156	02/26/2014	Northwest	10	0	H*-Oil
Anadarko Crazy Cat East	EA13-028	11/27/2012	Adjacent	36	0	H*-Oil
Williams Wormwood Unit 2	EA11-056	12/11/2010	Adjacent	27	27	CBNG
Anadarko Table Mountain Ph 2	EA10-376	09/30/2010	Overlying 6332H	83	5	CBNG
XTO Oil Addition	EA10-046	06/30/2010	Adjacent	10	0	Oil
Williams Hartzog Draw R Christensen	EA10-121	05/27/2010	Overlying 6332H	30	1	CBNG
Williams Culp Draw_Hartzog Draw	EA10-121	05/27/2010	Overlying 6332H	27	1	CBNG

Company, Project Name	NEPA Analyses: WY-070-	Approved	Location	Wells Appv'd	Wells Drilled	Type
XTO HD 3	EA07-174	09/10/2007	Overlying 5013H and 5126H	50	48	CBNG
XTO HD 2	EA7-011	02/11/2007	Adjacent	50	49	CBNG
Anadarko Savageton 3 & 4	EA06-192	08/25/2006	Overlying 4135H and 4157H	47	39	CBNG
XTO HD Federal	EA05-358	11/23/2005	Overlying 4135H and 4157H	52	51	CBNG
XTO HDU Federal	EA05-250	11/22/2005	Adjacent	16	6	Oil
Bill Barrett Hartzog Draw	EA05-296	11/15/2005	Adjacent	34	34	CBNG

* Horizontal Well project.

Congress made a 4-part process for federal fluid mineral decisions under the long-term needs of multiple-use. First is the land use / resource management plan (RMP); here the PRB FEIS and ROD amendment to the BFO RMP. Second are the decisions of whether and, if so, under what conditions, to lease lands for fluid mineral development. Courts held leasing decisions are an almost irrevocable resource commitment. Third, (this phase) is deciding on the proposed APD: the site-specific analysis, and mitigation. Fourth is the monitoring and reclamation of wells and their features. (Pendery 2010)

1.1. Background

The Hartzog Draw Unit was unitized as a secondary recovery unit for the Shannon Formation by Exxon in 1980. Since that time, it has progressed through several operators with Denbury assuming control in 2012. To date, 405 conventional oil wells are drilled within the unit boundary. Also, beginning in 2006, then operator XTO began development of the coalbed natural gas (CBNG) resource in the unit area. To date, 148 CBNG wells were drilled in the unit. Denbury also assumed the operatorship for the CBNG mineral leases. Denbury submitted 5 notices of staking (NOS) for horizontal oil wells on November 6, 2013. The onsite for the NOSs was conducted on January 7, 2014 with the following persons in attendance:

NAME	TITLE	AGENCY
Christi Haswell	Office Director/Project Manager	SWCA
Larry Bridger	Professional Engineer	Bridger Field Services
Terry Yates	Regulatory Compliance Manager	Denbury Onshore, LLC
Brandi Johnson	Regulatory Compliance Agent	Denbury Onshore, LLC
Richard Burton	H, E & S	Denbury Onshore, LLC
Teel Jensen	Drilling	Denbury Onshore, LLC
Craig Parker	Construction	Melgaard Construction
Robert Christensen	Landowner	
Bud Stewart	Energy Development Biologist	Wyoming Game and Fish
Scott Jawors	Wildlife Biologist	BLM
Kathy Brus	Supervisory Natural Resource Specialist	BLM

A post-onsite letter was sent to the operator January 13, 2014. APDs for all the wells were submitted February 3, 2014 and final APD fees submitted February 12, 2014. The APD deficiency letter was sent February 24, 2014. Deficiencies were received May 5, 2014 and the APDs were considered complete on May 9, 2014. Conditions of Approval were shared with the operator on May 14, 2014.

The BFO received a letter from the attorney of one of the landowners, LD Gilbertz, stating that he and Denbury had not reached a surface access agreement (SAA) and that he was opposed to the staking, onsite inspection, and drilling of the well proposed for his surface in the absence of a SAA.

The Denbury contractor contacted BLM the week of February 18, 2014 to request information regarding a 43 CFR 3814 bond for access to the well where surface use agreements could not be reached with the landowners (two landowners and 4 of the 5 well locations). [The 43 CFR 3814-1 bond form is obsolete; it was associated with the mineral interest entry of lands patented under the Stockraising Homestead Act. The Bond Form 3160-19 is now used though the procedures are essentially similar. This EA may refer to either bond form interchangeably.]

1.2. Need for the Proposed Project

BLM's need for this project is to determine whether, how, and under what conditions to support the Buffalo Resource Management Plan's (RMP) goals, objectives, and management actions with allowing the exercise of the operator's conditional lease rights to develop fluid minerals on federal leases. BLM incorporates by reference here, the APDs information (40 CFR 1502.21). Conditional fluid mineral development supports the RMP and the Mineral Leasing Act of 1920, the Federal Land Policy Management Act (FLPMA), and other laws and regulations.

1.3. Decision to be Made

The BLM will decide whether or not to approve the proposed development, and if so, under what terms and conditions (Conditions of Approval in Appendix A) agreeing with the Bureau's multiple use mandate, environmental protection, and RMP.

In the case of the two wells located over fee mineral (5013H and 6332H), BLM Washington Office Instruction Memorandum (IM) No. 2009-078 established policy and procedures for processing federal applications for permit to drill (APD) for directional drilling into federal mineral estate from multiple well pads on non-federal locations. In accordance with IM No. 2009-078 drilling, and producing the subject wells is a federal action. Construction, operation, and reclamation of infrastructure on non-federal land are not federal actions. However after consultation with the Department of Interior (DOI) solicitor's office, it was determined that the Unit Operating Agreement for the Hartzog Draw unit guaranteed federal access to the wells. Drilling and producing mitigations are in Conditions of Approval (COAs) for Conventional Application for Permit to Drill. In accord with IM No. 2009-078 an APD approval is a federal undertaking under Section 106 of the National Historic Preservation Act (NHPA), even when the resulting impacts are non-federal land. Actions that intentionally, significantly, and adversely affect a historic property with the intent to avoid the requirements of NHPA Section 106 are in violation of NHPA Section 110(k) and require the field office to deny the APD. The BLM's inspection and enforcement authority and responsibility would include compliance with any mitigation or other conditions established for approval of the APD as a result of the NHPA and Endangered Species Act (ESA) consultation. Find cultural mitigation in COAs for Conventional Application for Permit to Drill.

It is the BLM's responsibility and obligation to analyze the full effects of the action, and identify mitigation measures, regardless of the BLM's authority to enforce the mitigation. The BLM must identify mitigation measures that would reduce or eliminate the effects of a non-federal action when it is a connected action to the BLM proposed action (see the NEPA handbook, section 6.8.2.1.1, connected Non-federal Actions). Identifying mitigation outside of the BLM's jurisdiction alerts other agencies that can implement the mitigation. The probability of the other agencies implementing the mitigation measures is likely to occur, although those agencies may vary parameters recommended by the BLM.

BLM must also be assured of access to the well location for inspections related to the production of federal oil and gas minerals. In lieu of a valid surface access agreement (SAA) with the landowner, the operator may file a bond in order to access the mineral formerly under the Stock-Raising Homestead Act. This bond is separate from the operator's oil and gas lease bond, and is prepared similar to the regulations in found in 43CFR 3814.1(c) to cover the cost of compensation for damages associated with the development. For the two wells over federal mineral (4135H and 5126H), where the landowners and

operator could not come to an agreement after a good faith effort had been made, the operator provided 3814 Minerals Claimant bonds for the well locations. The BLM Wyoming State Office (WSO) notified the landowners of the bond submission on April 29, 2014. The landowners have 30 days from notification to appeal to the Wyoming BLM State Director if they feel that the amount of the bond is insufficient.

Full effects of the action and recommended mitigation measures can be found in the project Surface Use Plan and BLM Recommended Mitigation Measures (RMM) for Conventional Application for Permit to Drill in Appendix B.

1.4. Scoping and Issues

BLM posted the proposed APDs for 30 days and will timely publish the EA, any finding, and decision on the BFO website. This project is similar in scope to other fluid mineral development the BFO analyzed. External scoping is unlikely to identify new issues, as verified with recent fluid mineral EAs that BLM externally scoped. External scoping of the horizontal drilling in Crazy Cat East EA, WY-070-EA13-028, 2013, in the PRB area received 3 comments, revealing no new issues.

The BFO interdisciplinary team (ID team) conducted internal scoping by reviewing the proposal, its location, and a resource (issue) list (see administrative record, AR), to identify potentially significantly affected resources, land uses, resource issues, regulations, and site-specific circumstances not addressed in the tiered analysis or other analyses incorporated by reference. This EA will not discuss resources and land uses that are not present, unlikely to receive significant or material affects, or that the PRB FEIS or other analyses adequately addressed. This EA addresses the project’s potentially significant site-specific impacts that were unknown and unavailable for review at the time of the PRB FEIS analysis to help the decision maker come to a reasoned decision. The project area is clearly lacking wilderness characteristics as it is amidst mineral development, lacks federal surface and is less than 5,000 contiguous acres. Project issues include:

- Air quality
- Soils and vegetation: site stability, reclamation potential, riparian and wetland communities, invasive species; bonding
- Water: ground water, quality, and quantity of produced water.
- Wildlife: ESA compliance, raptor productivity, migratory birds, special status species
- Cultural: National Register eligible sites

BLM analyzed the following issues in the PRB FEIS and they do not present a substantial environmental question of material significance to this proposal:

Geological resources	Rights of way & corridors	Wilderness characteristics
Transportation & access	Paleontological resources	Livestock & grazing
Cave and karst resources	Visual resources	Recreation
Tribal treaty rights	Forest products	Environmental justice
Fire, fuels management, & rehabilitation	Lands & realty	Socio-economic resources
Mineral resources: locatable, leasable-coal, salable	Areas of critical environmental concern	

2. PROPOSED PROJECT AND ALTERNATIVES

2.1. Alternative A – No Action

The no action alternative would deny these APDs requiring the operator to resubmit APDs that comply with statutes and the reasonable measures in the PRB RMP Record of Decision (ROD) in order to lawfully exercise conditional lease rights. The PRB FEIS considered a no action alternative, pp. 2-54 to 2-62. The BLM keeps the no action alternative current using the aggregated effects analysis approach –

tiering to or incorporating by reference the analyses and developments approved by the subsequent NEPA analyses for adjacent and intermingled developments to the proposal area. See Table 1.2.

2.2. Alternative B Proposed Action (Proposal)

Overview. Denbury HD2014 POD includes the drilling and completion of 5 horizontal wells from fee surface locations to the Shannon formation at a depth of approximately 9,300 feet (True Vertical Depth, TVD) with additional lateral boring ranging from 5,400 to 8,400 feet. Landowners are Gilbertz Enterprises, Inc.; Mike Jordan; and Robert Christensen. Two wells (both located on Christensen’s property) are over fee mineral. The rest are over federal mineral as listed below.

Table 2.1. Well, Pad, and Lease List

Name	Well #	Qtr	Sec	Twp	Rng	Surface Hole Lease	Lateral Direction
Denbury HD 2014	4135H*	SWNW	13	44N	75W	WYW42608	S - SE
Denbury HD 2015	4157H	SWSW	15	44N	75W	WYW39178	SE
Denbury HD 2016	5013H	NWSW	1	45N	76W	Fee	NW
Denbury HD 2017	5126H	SENE	12	45N	76W	WYW51704	SE
Denbury HD 2018	6332H	NWNE	33	46N	76W	Fee	S

All of these wells are within the Hartzog Draw Secondary Recovery Unit boundary. If the wells are determined to be capable of production, the operator will install the necessary infrastructure as described below.

Drilling, Construction and Production Design Features Include:

- Denbury anticipates completing drilling and construction in 2 years. Drilling and construction is year-round in the region. Weather may cause delays but delays rarely last multiple weeks. Timing limitations in the form of conditions of approval (COAs) and/or agreements with surface owners may impose longer temporal restrictions.
- The operator anticipates that the well will be completed approximately 35 days after drilling operations have begun.
- A road network consisting of existing improved roads. All these wells are located close to existing infrastructure. The only additional road construction will be short approaches to several of the pads.
- An existing above ground power line network. If the wells are productive, additional overhead power will be required which will be provided by a third party contractor.
- If the wells are productive, they will be tied into the existing gathering system where fluids are pumped to an existing central battery facility. Several sections of buried flowline will be installed to facilitate the gathering.
- Drilling will be completed using a closed loop mud system, with no open reserve pit. However, drill cuttings will be dried and buried at least 3 feet below surface in a lined cuttings pit on site. The pit will be fenced to prevent wildlife and livestock entry until closed. The pit will be closed within 6 months of well completion.
- All engines will be equipped with an adequate muffler system, decibel level not to exceed 70 decibels at a distance of 200 feet from the exhaust of any muffler.
- Produced hydrocarbons and water will be put in tanks on location during completion work. Flowback and produced water will be analyzed and transported to disposal or incorporated into the EOR injection system where possible.

Drilling and Completion Water Sources and Amounts

For a detailed description of design features and construction practices associated with the proposed

project, refer to the surface use plan (SUP) and drilling plan included with the APD. Also see the APD for maps showing the proposed well locations and associated facilities described above.

Water for drilling will be the Hartzog Draw Unit Water Supply Well # 2 (SWNE Sec 34 T45N R75W). The drilling phase will require approximately 25,000 bbls of fresh water per well, which will be transported by truck. The operator plans on hydraulic fracturing (HF) to complete the well and will use 45,000 bbls of water from the existing Shannon waterflood injection supply with the unit area. Temporary surface lines will be installed to each pad to provide water. A large tank (Poseidon) will be located on the pad to contain the water supply. No additional disturbance area will be required for the completion phase. For more information please refer to the Surface Use Plan (MSUP p. 3).

Denbury estimates that during the installation of each individual well it may use up to 75,000 barrels of water for construction, drilling and completion. For about a 6 to 8 week period per well, the average daily truck traffic (ADT) to and from the location will be approximately 20 to 30 large truck (water haulers, cement trucks, etc.) and 15 to 20 personal pickup truck trips per day. During the well completion process (a 2 to 6 week period per well) the ADT is estimated at 15 large truck and 15 personal pickup truck trips per day. Finally, during the production phase the ADT will decrease to 2 pickup truck trips per day. BLM incorporated and analyzed the implementation of committed mitigation measures in the SUP and drilling plan, in addition to the COAs in the PRB FEIS ROD, as well as changes made at the onsite.

Table 2.2. Anticipated Drilling and Completion Sequence and Timing (per well)

Drilling and Completion Step	Approximate Duration
Build location (roads, pad, and other initial infrastructure)	9 days
Mob rig	8 days
Drilling (24/7)	38 days ¹
Schedule/logistics for completion	28 days
Completion (setup, completion, demobilization)	5 days

¹ By comparison, approximately 2 days are required to drill a CBNG well. Source: ICF 2012

Table 2.3. Disturbance Summary for Wells (for exact figures for each well, see APD):

Facility	Number or Miles	Factor	Disturbance
Engineered Pads	5 (~500 ft x 500 ft)		27.76 acres
Improved Roads	0.1 miles (520 ft)	Length x 50 ft wide	0.60 acres
Proposed Overhead Power	3,630 ft	30 ft wide	2.5 acres
Pipelines	15,640 ft	30 ft wide	10.77 acres
Total Short Term Surface Disturbance			41.63 acres
Engineered Pads	5 (~375 ft x 300 ft)	Reclaimed	12.59 acres
Improved Roads	0.1 miles (440 ft)	Length x 50 ft wide	0.60 acres
Proposed Overhead Power	3,630 ft	30 ft wide	2.5 acres
Pipelines	Reclaimed		0 acres
Total Long Term Surface Disturbance			15.69 acres

Additionally, the operator, in their APD, committed:

- To comply with the approved APD, applicable laws, regulations, orders, and notices to lessees.
- To obtain necessary permits from agencies.
- That they had offered water well agreements to the owners of record for permitted wells.
- To incorporate measures to alleviate resource impacts in their submitted surface use and drilling plans.
- That a SAA was reached with the with the landowners or a bond was posted as stipulated by 43 CFR 3814.1.

The reasonably foreseeable activity for this and adjacent areas includes:

- Infill drilling within the Hartzog Draw Unit area (35,494 acres) for oil recovery and water injection in the Shannon formation on 80 acre to 640 acre spacing;
- Infill drilling for CBNG recovery on 80 acre spacing;
- Exploration of additional oil and gas producing zones;
- Enhanced oil recovery using CO₂ in the Shannon Formation.
- Additional perimeter drilling of horizontal wells to protect unit resources;
- Drilling of replacement wells for old, unsuitable wellbores for enhanced oil recovery using CO₂;
- Aging pipeline replacement;
- Installation of additional infrastructure such as gas gathering, injection, power supply, etc.

Resource Mitigation and Project Design Features

Denbury provided design features and mitigation measures that avoid, reduce, and minimize impacts to specific resources. Resource protection/mitigation design features associated with this project include:

- The operator will begin interim reclamation activity as soon as possible after well completion. All pads will be recontoured, reduced in size to support production activities, topsoil respread and seeded (MSUP p. 4)
- Migratory birds will be effectively excluded from all facilities that pose a mortality risk, including, but not limited to, heater treaters, flare stacks, and secondary containment where escape may be difficult or wildlife toxicants are present (BLM IM WY-2013-005).
- No new treatment facilities will be constructed for these wells. Production will be transferred via pipeline to existing facilities.

2.3. Conformance to the Land Use Plan and Other Environmental Assessments

This proposal does not diverge from the goals and objectives in the Buffalo Resource Management Plan (RMP), 1985, 2001, 2003, 2011, and generally conforms to the terms and conditions of that land use plan, its amendments, supporting FEISs, 1985, 2003 (2011), and laws including the Clean Air Act, 42 USC 7401-7671q (2006), the Clean Water Act, 33 USC 1251 et seq. (1972), etc.

3. AFFECTED ENVIRONMENT

The Denbury HD 2014 POD area lies south of Gillette in an area comprised of primarily gently rolling hills typical of the short grass prairie located in the southeastern portion of the PRB. The landscape is shaped by the generally low gradient intermediate to primarily ephemeral drainages. This project falls within Major Land Resource Area 58B in the 10 to 14 inch precipitation zone as defined by the Natural Resource Conservation Service. To the south and west of the project area lie the Pumpkin Buttes. These major features are flat mesas formed by the weathering of resistant cap rock (White River formation). Pumpkin Buttes are visible from all locations in the proposed project and from most areas in the PRB. The Buttes rise over 700 feet above the surrounding prairie and dominate the landscape. The highest point in the area is west of the unit boundary at 6052 feet above sea level at the top of the North Butte. The lowest point in the area is located to the north along a tributary to Pumpkin Creek at 4800 feet above sea level. The topography is rolling to relatively flat (3-10% slope) with numerous draws (rather wide with gently rising slopes) throughout the project area.

Recent historical uses of the lands in this area are ranching, stock grazing, dryland farming, conventional oil and gas production, uranium mining and most recently CBNG development. Exxon began conventional oil field development and the origination of the Hartzog Draw unit in 1980. There is existing road and pipeline infrastructure which was developed by the mineral companies as well as ranch operations. The well locations are privately held surface which overlays federal, state, or fee minerals, as stated in Table 1.1 above.

The project area is primarily grass land consisting mostly of native grasses. Sage brush cover is primarily sparse (0-5 %) with small pockets (0.5 to 10 acres) of moderate to dense (10-20 %) growth occurring throughout the project area. The project area lacks any large stands of mature trees, and only a few scattered cottonwoods are present, primarily along Pumpkin Creek and tributaries.

The BLM uses the aggregated effects analysis approach incorporating by reference the circumstances and developments approved via the subsequent NEPA analyses for adjacent and intermingled developments coincident to proposal area to retain currency in the no action alternative. 615 F. 3d 1122 (9th Cir. 2010). There are 403 wells in the Hartzog Draw Unit area: 182 active producing and 154 active injection (Wyoming Oil and Gas Conservation Commission (WOGCC) 2014). Production for 2013 averaged 1643 barrel of oil per day (BOPD), 391 mcf (thousand cubic feet) gas per day and 6600 barrels of water per day (BWPD). The conventional produced water is reinjected for secondary recovery of the oil from the Shannon formation.

The total number of conventional wells in the Buffalo planning area is 1313, which includes 783 horizontal wells (federal, fee, and state) (as of April 2013). This represents 41% of the projected 3,200 in the 2003 PRB ROD. (See Table 2.3 for an approximation of the disturbance in the current situation.) This agrees with the PRB FEIS which analyzed the reasonably foreseeable development in the PRB of 51,000 CBNG and 3,200 natural gas and oil wells. In addition, other operators are likely to continue seeking permits to develop unconnected leases in or in the affects analysis areas near the project area. Over 60% of the deep oil and gas wells are hydraulically fractured; BLM and Goolsby 2012. Decisions to approve or deny future proposals will occur following APD submittal. Development occurring on non-federal surface and non-federal mineral estate would continue.

BLM's position is there is a rare lack of surface disturbance impacts attributable to well type, subject to showing a distinction, not a mere difference. See, State Director Reviews WY-2010-023, Part 2, p. 3, and fn. 7, and 2013-005, pp. 2-3. This supports BLM and national policy in 43 CFR 3160 et seq, leasing, APD Form 3160-3, and 2005's Energy Policy Act (Kreckel 2007). The US Geological Survey noted there is only a remote chance of induced seismic activity from the nations hydraulic fracturing and water injection at volumes contemplated in the PRB.

Table 1.2 above includes the environmental analyses that have been completed in this area in the recent past. Site specific NEPA analyses were completed for the areas in question for CBNG development in 2006, 2007 and 2010. This analysis will reference, tier to and incorporate the analyses performed for these projects as appropriate.

3.1. Air Quality

Refer to the PRB FEIS pp. 3-291 to 3-299, for a 2003-era description of the air quality conditions. BLM incorporates by reference, Update of Task 3A Report for the Powder River Basin Coal Review Cumulative Air Quality Effects for 2020, BLM (AECOM), 2009, (Cumulative Air Quality Effects, 2009) as it captures the cumulative air quality effects of present and projected PRB fluid and solid mineral development. The Environmental Protection Agency (EPA) established ozone standards in 2008, finalizing them in 2011. Existing air quality in the PRB is "unclassified/attainment" with all ambient air quality standards. It is also in an area that is in prevention of significant deterioration zone. PRB air quality is a rising concern due to ozone in the oil and gas producing Upper Green River Basin that became 1 of the nation's 40 "nonattainment" zones for ozone in 2012; in addition to PRB-area air quality alerts issued in 2011-2014 for particulate matter (PM), attributed to coal dust. Four sites monitor the air quality in the PRB: Cloud Peak in the Bighorn Mountains, Thunder Basin northeast of Gillette, Campbell County south of Gillette, and Gillette. In addition, the Wyoming Air Resource Monitoring System (WARMS) measures meteorological parameters from 9 sites throughout the State, and particulate concentrations from 5 of those sites, monitors speciated aerosol (3 locations), and evapotranspiration rates

(1 location). The sites monitoring air quality for the Powder River Basin are located at Sheridan, South Coal Reservoir, Buffalo, Fortification Creek, and Newcastle. The northeast Wyoming visibility study is ongoing by the Wyoming Department of Environmental Quality (WDEQ). Sites adjacent to the Wyoming PRB-area are at Birney on the Tongue River 24 miles north of the Wyoming-Montana border, Broadus on the Powder River in Montana, and Devils Tower.

Existing air pollutant emission sources in the region include:

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

3.2. Soils, Ecological Sites, and Vegetation

Within the PRB's Northern Rolling High Plains-Southern Part major land resource area (USDA Handbook 296, 2006) are numerous ecological sites - a distinctive kind of land with specific characteristics differing from other kinds of land in its ability to produce a distinctive kind and amount of vegetation. Different soil compositions support an ecological site. BLM obtained detailed soils identification and data for the project area from the Campbell County Survey Area, Wyoming Soil Survey Geographic (SSURGO) Database (WY605). The Natural Resource Conservation Service (NRCS) performed the soil survey according to National Cooperative Soil Survey standards. The BLM uses county soil survey information to predict soil behavior, limitations, or suitability for a given proposal.

The locations selected for these well pads and access routes all are classified as being Loamy ecological sites, with the exception of one small segment of access to the 4157H well which was classified as sandy. Slopes at each location that will be impacted by pad or road construction are less than 25%.

BLM staff identified the dominant vegetation community types in the project area are mixed-grass prairie and sagebrush shrubland. Dominant grasses identified include: crested wheatgrass, cheatgrass and Japanese brome, blue grama, needleandthread grass, prairie junegrass, western wheatgrass, green needlegrass, bluebunch wheatgrass, threadleaf sedge, and Sandburg's bluegrass. Forbs identified include: scarlet globemallow, milkvetches, field pennycress, and fringed sagewort. Other vegetative species identified at onsite: Wyoming big sagebrush, prickly pear cactus and winterfat. For additional information on ecological sites and vegetation, refer to the HD CBM 2 POD EA, WY070-07-011, pp. 19 – 23 and the HD CBM 3 POD EA, pp. 18-21.

3.3. Minerals – Locatable

The southern wells (4135H and 4157H) are proposed in areas on which mining claims were filed and there are numerous mining claims within 3-miles of the proposals. These mining claims likely target uranium. One active in-situ recovery (ISR) uranium mining project, Cameco's North Butte Mine, occurs less than 3 miles west of the 4157H location and Uranium One's Christensen Ranch Mine lies to the west. There are also several proposed mines in the area adjacent to the Pumpkin Buttes.

3.4. Water Resources

The Hartzog Draw Unit area, which is historically used for livestock raising as well as conventional oil and gas production, is on the divide between the Powder River and Belle Fourche watersheds. Water supplies were developed for livestock use as well as to supplement the secondary recovery efforts in the

unit. Produced water from the active CBNG wells in the area is gathered for surface disposal to the Belle Fourche River drainage.

WDEQ has primacy to regulate Wyoming's water quality, under EPA oversight. The Wyoming State Engineer's Office (WSEO) has authority for regulating water rights issues and permitting impoundments for the containment of the State's surface waters. The WOGCC has authority for permitting and bonding off channel pits located over state and fee minerals.

3.4.1. Groundwater

The area's historical use of groundwater was for stock or domestic water. A search of the WSEO Ground Water Rights Database showed 20 permitted water wells within 1 mile of the proposed wells, including 4 stock and domestic water wells with depths ranging from 125 to 630 feet. The other wells are classified as monitor (9), Industrial (1) and Miscellaneous (6). Refer to the PRB FEIS for additional information on groundwater, pp. 3-1 to 3-36, as well as the HD CBM 2 EA, pp. 31 to 33, and HD CBM 3 EA, pp. 29 to 30 for additional site specific information.

Denbury operates 148 CBNG wells in the Hartzog Draw Unit area. These wells produce from the Big George coal zone which is in the Paleocene Fort Union formation at a depth of approximately 1,200 feet. In general, water production per well declined since the wells were first put into production. Initial production was estimated at 30 gpm, however current production declined to less than 10 gpm. The Fox Hills Aquifer, an identified important fresh water zone in the PRB lies at 6,500 to 6,900 feet below ground surface, well above the target formation (9,600 feet).

3.4.2. Surface Water

The project area is split between the Pumpkin Creek drainage which is tributary to the Powder River on the north and west and to the Mud Creek Spring drainage which is tributary to the Belle Fourche River on the south and east. Most of the area drainages 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, Glossary). The channels are primarily well vegetated grassy swales, without defined bed and bank. See generally the PRB FEIS for a surface water quality discussion, pp. 3-48 to 3-49. Based on the operator's design for the project, there should be no disturbance to existing surface water drainage associated with this project.

3.5. Wetlands/Riparian

Refer to the PRB FEIS for additional information on wetlands, pp. 3-108 to 3-111, as well as the HD CBM 2 EA, p. 23 and HD CBM 3 EA, pp. 33-34 for additional site specific information. This project is designed to avoid any disturbance or impacts to the wetlands and riparian areas.

3.6. Invasive or Noxious Species

The operator discovered state-listed noxious weeds and invasive/exotic plant infestations by a search of inventory maps and/or databases or during subsequent field investigation. This is an area of potential black henbane invasion, as well as Canada thistle and scotch thistle. Gelbhard, 2003 and Duniway 2010, showed that surface disturbances increase the proliferation of invasive or noxious species out to 0.5 miles or more from the disturbance while correspondingly compromising native communities in the same footprint. Cheatgrass (*Bromus tectorum*) and to a lesser extent, Japanese brome (*B. japonicus*) exist in the affected environment. These species are found in high densities and numerous locations throughout NE Wyoming. Balch, 2013, linked the proliferation of cheatgrass in semi-arid environments to the increased frequency and severity of wildfire.

3.7. Fish and Wildlife

The PRB FEIS identified wildlife species occurring in the PRB, pp. 3-113 to 3-206. BLM performed a habitat assessment in the project area on January 7, 2014. The biologist evaluated impacts to wildlife resources and recommended project modifications where wildlife issues arose. BLM wildlife biologists also consulted databases compiled and managed by BLM BFO wildlife staff, the PRB FEIS, WY Game and Fish Department (WGFD) datasets, and the Wyoming Natural Diversity Database (WYNDD) to evaluate the affected environment for wildlife species that may occur in the area. This section describes the affected environment for wildlife species known or likely to occur in the area that are likely to be impacted by the action. Rationale for species not discussed in detail below can be referenced in the administrative record.

3.7.1. Threatened, Endangered, Candidate, Special Status (Sensitive) Species (SSS)

The Buffalo BLM receives a species list periodically from the US Fish and Wildlife Service (FWS) concerning threatened, endangered, proposed, and candidate species. Species included on that list that would be impacted by the proposed project will be discussed below.

3.7.1.1. Candidate Species - Greater Sage-Grouse (GSG)

The PRB FEIS has a detailed discussion on GSG ecology and habitat, pp. 3-194 to 3-199. Subsequently the FWS warranted the Greater Sage-Grouse (GSG) for federal listing as threatened across its range, but precluded listing due to other higher priority listing actions, 75 Fed. Reg. 13910 to 14014, Mar. 23, 2010; 75 Fed. Reg. 69222 to 69294, Nov. 10, 2010. GSG are a WY BLM special status (sensitive) species (SSS) and a WGFD species of greatest conservation need because of population decline and ongoing habitat loss. The 2012 population viability analysis for the Northeast Wyoming GSG found there remains a viable population of GSG in the PRB (Taylor et al. 2012). However, threats from energy development and West Nile virus (WNV) are impacting future viability (Taylor et al. 2012). The BLM IM WY-2012-019 establishes interim management policies for proposed activities on BLM-administered lands, including federal mineral estate, until RMP updates are complete. Currently there are 5 WGFD identified occupied leks within 4 miles of the proposal; DENBURY HD 2014 HDU 5013H (Innes and Willow Creek lek), DENBURY HD 2014 HDU 6332H (Innes lek), DENBURY HD 2014 HDU 5126H (Innes and Willow Creek lek), HDU 4135H (Gilbertz II, North Butte, and Mod Spring Creek lek), and DENBURY HD 2014 HDU 4157H (Gilbertz II, North Butte, and Mod Spring Creek lek). The proposal area does provide isolated areas of suitable habitat and the species is expected to occur.

3.7.2. Big Game

The big game species occurring in the project area are mule deer and pronghorn. The WGFD identifies the proposal area to have yearlong and winter-yearlong seasonal habitats for mule deer and pronghorn, respectively. The PRB FEIS discussed the affected environment for pronghorn and mule deer on pp. 3-117 to 3-122, pp. 3-127 to 3-133, respectively. The big game species mentioned above are known to occur throughout the proposal area.

3.7.3. Raptors

The PRB FEIS discussed the affected environment for raptors, pp. 3-141 to 3-148. Most raptor species nest in a variety of habitats including (but not limited to): native and non-native grasslands, agricultural lands, live and dead trees, cliff faces, rock outcrops, and tree cavities. Suitable nesting habitat is present in the project area. Raptor species suspected to occur in the area include golden eagle, northern harrier, Swainson's hawk, American kestrel, short-eared owl, great horned owl, red-tailed hawk, western burrowing owl (SSS), ferruginous hawk (SSS), and rough-legged hawk (winter resident).

According to the BLM raptor database and the onsite inspection, 5 nests used by 3 known species of raptors (Great horned-owl, red-tailed hawk and ferruginous hawks) are within 0.5 miles from 3 proposed DENBURY HD 2014 HDU wells. Nesting pairs of great horned-owls used BLM nests #5746, 8379 and

10626. The DENBURY HD 2014 HDU 6332H well is proposed within 0.5 mile but greater than the FWS recommended 0.125 mile from nests #5746, 8379 and 10626. A nesting pairs of red-tailed hawks used BLM nests # 8380. The DENBURY HD 2014 HDU 6332H well is proposed within 0.5 mile but greater than the FWS recommended 0.25 mile from nests # 8380. A nesting pairs of ferruginous hawks used BLM nests #4383. The DENBURY HD 2014 HDU 5013H well is proposed within 0.5 mile from nest #4383, inside the 1 mile FWS recommended buffer.

3.7.4. Migratory Birds

The PRB FEIS discussed the affected environment for migratory birds, pp. 3-150 to 3-153. A wide variety of migratory birds may occur in the proposal area at some point during the year. Migratory birds are birds that migrate for breeding and foraging at some point in the year. The BLM-FWS Memorandum of Understanding (MOU) (2010) promotes the conservation of migratory birds, complying with Executive Order 13186 (Federal Register V. 66, No. 11). BLM must include migratory birds in every NEPA analysis of actions that have potential to affect migratory bird species of concern to fulfill obligations under the Migratory Bird Treaty Act (MBTA). The MBTA (and Bald and Golden Eagle Protection Act (BGEPA)) are strict liability statutes so require no intent to harm migratory birds through prosecuting a taking. Recent prosecutions or settlements in Wyoming, and the west, cost companies millions of dollars in fines and restitution (which was usually retrofitting power lines to discourage perching to minimize electrocution or shielding ponds holding toxic substances). BLM encourages voluntary design features and conservation measures supporting migratory bird conservation, in addition to appropriate restrictions.

Habitats occurring near all of the DENBURY HD 2014 HDU proposed well locations include sage-brush steppe grasslands, mixed grass prairie, and mature deciduous trees. 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 declined more consistently than any other ecological association of birds over the last 30 years (WGFD 2009). The FWS’s Birds of Conservation Concern (BCC 2008) report identifies species of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the ESA. Species in this list that have the potential to occur in this area are: Brewer’s sparrow, sage thrasher, loggerhead shrike, short-eared owl, and grasshopper sparrow. Of these, 3 species are identified on the BLM Wyoming SSS list.

The WGFD Wyoming Bird Conservation Plan (Nicholoff 2003) identified 3 groups of Wyoming’s high-priority bird species: 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 of high priority but are of local interest. Species likely occurring in the project area are in Table 3.1.

Table 3.1. Migratory Birds Occurring in the Proposal Area (Nicholoff 2003)

Level	Species	WY BLM Sensitive	Species	WY BLM Sensitive
Level I	Brewer’s sparrow	Yes	Ferruginous hawk	Yes
Level II	Lark bunting	No	Sage thrasher	Yes
	Loggerhead shrike	Yes	Vesper sparrow	No

3.8. Cultural Resources

In accordance with Section 106 of the National Historic Preservation Act, BLM must consider impacts to historic properties (sites that are eligible for or listed on the National Register of Historic Places (NRHP)). For an overview of cultural resources that are found in the PRB, refer to the *Draft Cultural Class I Regional Overview, Buffalo Field Office* (BLM, 2010). A Class III (intensive) cultural resource inventory (BFO project no. 70140040) was performed to locate specific historic properties which may be impacted by the proposal. Previously approved Class III inventories 70050246 and 70070018 covered the remainder of the project area. The following resources are near the proposal.

Cultural Resources Near the Proposal and National Register of Historic Places (NRHP) Eligibility

Site #	Site Type	NRHP Eligibility	Site #	Site Type	NRHP Eligibility
48CA1510	Historic	NE	48CA2156	Historic	E
48CA2082	Historic	E	48CA4329	Pre-historic	E
48CA2180	Historic	NE	48CA5556	Pre-historic	NE

4. ENVIRONMENTAL EFFECTS

No Action Alternative. BLM analyzed the no action alternative as Alternative 3 in the PRB FEIS and it subsequently received augmentation of the effects analysis in this EA through the analysis of mineral projects, their approval, and construction; and through the analysis and approval of other projects. BLM incorporates by reference these analyses in this EA (see Table 1.2). This updated the no action alternative and cumulative effects. The Denbury HD 2014 project area has surface disturbance from existing roads, well pads, and oil and gas facilities. Under the no action alternative, on-going well field operations would continue as would the development of currently approved single and multi-well pads and wells in the area. The production and the drilling and completion of these new wells would result in noise and human presence that could affect resources in the project area; these effects could include the disruption of wildlife, the dispersal of noxious and invasive weed species, and dust effects from traffic on unpaved roads. Present fluid mineral development in the PRB is under half of that envisioned and analyzed in the PRB FEIS. There is only a remote potential for significant effects above those identified in the PRB FEIS to resource issues as a result of implementing the no action alternative.

Alternative B, Proposed Action (Proposal)

4.1. Air Quality

In the project area, air quality impacts would occur during construction (due to surface disturbance by earth-moving equipment, vehicle traffic fugitive dust, well testing, as well as drilling rig and vehicle engine exhaust) and production (including 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. BLM incorporates by reference the analysis found in the August 2012 Lease Sale EA, WY-070-EA12-44, pp. 45-51 (air quality, greenhouse gas emissions, and visibility). Air quality impacts modeled in the PRB FEIS and Cumulative Air Quality Effects, 2009 concluded that PRB projected fluid and solid development would not violate state, tribal, or federal air quality standards and this project is well within the projected development parameters.

4.2. Soils, Ecological Sites, and Vegetation

4.2.1. Direct and Indirect Effects

The construction of these pads and access roads will eliminate the natural existing soil and ecological site characteristics and create a new site with a mixing of horizons. The created location will not have the same chemical and physical characteristics that existed prior to disturbance and will be more susceptible to the forces of nature without additional stabilization efforts.

- Exposing of soil geologic material from depth during pad construction would mix materials which have differing chemical and physical properties and may require additional interim reclamation stabilization methods until revegetation is successful.
- Amount of bareground, physical and chemical properties, and conditions which create sites could be classified as highly erosive to wind and water erosion.
- The proposed cut and fill slopes of 2:1 (50%) slopes contribute to the erosion classification and exceed the 25% slope conservation measure. Additional stabilization methods will be applied
- Soil compaction may occur. The collapse of soil pores results in decreased infiltration and increased erosion potential. Factors affecting compaction include soil texture, moisture, organic matter, clay

content and type, pressure exerted, and the number of passes by vehicle traffic or machinery. Compaction may be remediated by plowing or ripping.

- Modification of hill slope hydrology.
- Direct effects (removal and/or compaction) to vegetation would occur from ground disturbance caused by drilling rig equipment and construction of a well pads, tank batteries, 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, roads, water-handling facilities or other semi-permanent facilities may result in loss of vegetation and affect reclamation success for the life of the project.

For additional information regarding soils, ecological sites and vegetation, refer to the PRB FEIS, pp. 4-153 to 164, 4-343 to 391, 4-406, as well as the HD CBM 2 EA, p. 33-36 and HD CBM 3 EA, pp. 31-33 for additional site specific information. Also the National Academy of Sciences found very little risk of induced seismic activity from hydraulic fracturing.

4.2.2. Cumulative Effects

For details on expected cumulative impacts, refer to the PRB FEIS, pp. 4-151. The PRB FEIS defines the designation of the duration of disturbance (pp. 4-1 and 4-151). Most soil disturbances would be short term impacts with expedient interim reclamation and site stabilization. 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, if applicable mitigation measures are not used. For additional information regarding cumulative effects to soils, ecological sites and vegetation, also refer to HD CBM 2 EA, p. 36-37 and HD CBM 3 EA, pp. 33-34 for additional site specific information.

4.2.3. Mitigation Measures

Denbury Onshore LLC and BLM will apply the following mitigation to reduce impacts to soils and vegetation from surface disturbance.

The operator has committed to expedient interim reclamation within 6 months of the completion of the well. All the pads will be recontoured to a smaller footprint that will support production activities and restabilized. Topsoil piles will be respread and reseeded with a compatible seed mixture selected for revegetation success.

Culverts will be at the appropriate locations at the intersection of the pad access roads and existing roads to insure adequate drainage relief.

4.2.4. Residual Effects

Residual effects across the project would include a long-term loss of soil productivity associated with well pads and roads. The PRB FEIS identified residual effects (p. 4-408) such as the loss of vegetative cover, despite expedient reclamation, for several years until reclamation is successfully established. In spite of the above residual effects, the BLM considers that Alternative B with is within the parameters for surface disturbance and surface disturbance reclamation in PRB FEIS ROD.

4.3. Minerals - Locatable

Conflicts may occur between future uranium projects and these proposed wells. It is important that the companies potentially affected take the initiative to keep the others informed about their status and design plans for pipelines, electrical power, roads, so they may optimize their own project without impeding the others' project, or create redundant surface disturbances, and thus preclude the imposition of top-down federal or state solutions. Additional information on the impacts to locatable minerals, and its influence on cumulative effects from energy development are in Sections 3.1.4. and 4.2.4 of the Crazy Cat East Oil and Gas Proposal EA, incorporated here by reference.

Uranium recovery would entail the addition of disturbance activities for construction of roads, facilities and well locations. Earth-moving activities associated with are nearly the same for those of CBNG projects and conventional oil well installation. It involves construction of surface facilities, access roads, well fields, and pipelines and would include clearing of top soil and land grading. Drilling of wells and installation of pipelines will occur. Low levels of traffic generated by construction activities and daily operations when the project is operational would not significantly increase traffic or accidents on roads in the vicinity. However the addition of ISR uranium recovery project within the project vicinity will add to the cumulative effect of soil disturbances and may delay interim and final reclamation on some of the roads proposed for use in Denbury HD 2014 POD.

4.4. Water Resources

Adherence to the drilling COAs, the setting of casing at appropriate depths, following safe remedial procedures in the event of casing failure, and using proper cementing procedures should protect fresh water aquifers above the drilling target zone. Compliance with the drilling and completion plans and Onshore Oil and Gas Orders Nos. 2 and 7 minimize an adverse impact on ground water. The volume of water produced by this federal mineral development is unknowable at the time of permitting.

Denbury will have to produce the wells for a time to be able to estimate the volume and quantity of water production. To comply with Onshore Order Oil and Gas Order No. 7, Disposal of Produced Water, Denbury will submit a Sundry to the BLM within 90 days of first production which includes a representative water analysis and the final proposal for water management. The quality of water produced in association with conventional oil and gas historically was such that surface discharge would not be possible without treatment. Initial water production is quite low in most cases. There are 3 common alternatives for water management: re-injection, deep disposal, or disposal into pits. All alternatives would be protective of groundwater resources when performed in compliance with state and federal regulations.

For additional information regarding water resources, refer to the PRB FEIS, pp, 4-1 to 69, 4-392, 4-405, 3-36 to 56, 4-69 to 122, 4-393, 4-405, as well as the HD CBM 2 EA, p. 47-54 and HD CBM 3 EA, pp. 51-57 for additional site specific information.

4.5. Groundwater

4.5.1. Direct and Indirect Effects

Surface casing in these wells will be set in a competent formation around 2,050 feet bgs to insure that the shallow aquifers are isolated and protected by at least two strings of casing (surface and intermediate or production) as well as cement. The Fox Hills Aquifer, at a depth of 6,500+ feet will be isolated by the intermediate casing string and cement between the casing and the formation. The operator will verify that there is competent cement across the aquifer, from 100 feet above to 100 feet below the Fox Hills formation. This will ensure that ground water will not be adversely impacted by well drilling and completion operations.

Drilling water will come from the permitted water supply well used for waterflood make-up water in the Hartzog Draw Unit. For completion (HF) the operator will use water produced in association with conventional oil and gas for the wells. Flow back fluids resulting from the HF completion will be disposed in the HDU Well 4582, as permitted by the WDEQ, or if the water quality is sufficient, the water will be added back to the injection system for the waterflood (see MSUP p. 3).

The cumulative industry and regulatory experience shows that thousands of wells pierce the nation's largest aquifer in western Texas, Oklahoma, and Kansas with essentially no direct or indirect impact to that groundwater, see, <http://www.spe.org/jpt/print/archives/2010/12/10Hydraulic.pdf>. A 2004 EPA study found it unlikely that hydraulically fractured CBNG wells would contaminate ground water. The EPA has

an expansive, on-going study looking at more aspects of hydraulic fracturing and has yet to issue findings. A 2011-2012 Geological Survey study found no groundwater effects from thousands of deep horizontally fractured oil and gas wells. Another study found no direct link between hydraulic fracturing and studied aquifers, Warner, 2012.

4.5.2. 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 using 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.

4.6. Invasive Species

4.6.1. Direct and Indirect Effects

The operator committed to the control of noxious weeds and species of concern using the following measures identified in their Integrated Pest Management Plan (IPMP): 1) Incorporating construction procedures to preclude contamination from outside sources; 2) Educate employees and contractors regarding weed identification and prevention; 3) Monitor for infestations and 4) Treat infestations with appropriate herbicides. The use of existing facilities along with the surface disturbance associated with construction of proposed access roads, pipelines, and related facilities would present opportunities for weed invasion and spread. 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. However, applicant committed measures will reduce potential impacts from noxious weeds and invasive plants. For additional information on Invasive Species, refer to the PRB FEIS, pp, 4-1 to 69, 4-392, 4-405, 3-36 to 56, 4-69 to 122, 4-393, 4-405, as well as the HD CBM 2 EA, pp.36-37 and HD CBM 3 EA, pp. 34-35 for additional site specific information.

4.7. Fish and Wildlife

4.7.1. Wildlife Threatened, Endangered, Proposed and Candidate Species

4.7.1.1. Candidate Species Greater Sage-Grouse (GSG)

4.7.1.1.1. Direct and Indirect Effects

Effects to GSG from surface disturbing and disruptive activities associated with development of horizontal oil wells were analyzed in the Sahara POD EA, WY-070-EA13-72, 2013, Section 4.6.4.1, pp. 34-37, incorporated here by reference. Activities associated with development of this project are anticipated to be similar in nature, with the following additional site-specific information. The proposal area contains suitable nesting, brood-rearing, and winter habitat. Construction of the wells and their associated infrastructure will cause fragmentation of sagebrush stands and result in the direct loss of approximately 41.63 acres (see Table 2.3. Disturbance Summary for Wells) of GSG habitat. Noise and human disturbance associated with roads, construction, drilling, and completion will be disruptive to GSG. Implementation of the project will adversely impact nesting habitat, both through direct loss of suitable habitats and avoidance of the area by GSG due to fragmentation and anthropogenic activity.

4.7.1.1.2. Cumulative Effects

Cumulative effects to GSG from surface disturbing and disruptive activities associated with development of horizontal oil wells were analyzed in the Sahara POD EA, WY-070-EA13-72, 2013, Section 4.6.4.1.2, pp. 36-37, incorporated here by reference.

4.7.1.1.3. Mitigation Measures

Based on the summary of research describing the impacts of energy development on GSG, efforts to reduce habitat loss and fragmentation are likely to be the most effective in ensuring long-term lek persistence. The proposed DENBURY HD 2014 HDU 4157H location is within 2 miles of the occupied Gilbertz III lek and the proposed DENBURY HD 2014 HDU 4135H location is within 2 miles of the

occupied Gilbertz II lek. To decrease the likelihood that GSG will avoid the project area, and increase habitat quality by reducing noise and human activities during the breeding season, the BLM imposes a 2 mile timing limitation for surface disturbance (construction and drilling) during the breeding season (March 15-June 30) as a recommended condition of approval (COA).

4.7.1.1.4. Residual Effects

Noise and human disturbance resulting from drilling, completions, maintenance, and production activities may impact GSG nesting in the area for the life of the project. Suitability of the project area for GSG will be further negatively affected due to habitat loss, fragmentation, and proximity of human activities associated with the proposal. The impact of the proposed development cumulatively contributes to the potential for local GSG extirpation. Alternative B is consistent with current BLM and Wyoming GSG conservation strategies and the anticipated effects are within the parameters of the PRB FEIS/ROD. Current research does not identify specific components of energy development that measurably decrease impacts to GSG or their habitats. Even in areas where a variety of mitigation measures were applied, negative population impacts were still measurable when well density exceeded 1 well per square mile. Management of energy development based on current core area configurations and associated lease stipulations, conditions of approval, and best management practices (BMPs), may not be sufficient to protect the population viability of PRB GSG.

4.7.2. Big Game

4.7.2.1. Direct and Indirect Effects

The PRB FEIS discusses impacts, including direct and indirect effects, cumulative effects, and residual effects to big game on pp. 4-181 to 4-215. Identified big game seasonal habitats would be directly disturbed with the construction of wells, and associated infrastructure. Long term disturbance would be direct habitat loss. Short-term disturbances also result in direct habitat loss; however, they should provide some habitat value as these areas are reclaimed and native vegetation becomes established. In addition to the direct habitat loss, big game would likely be displaced from the project area during drilling and construction. A study in central Wyoming reported that mineral drilling activities displaced mule deer by more than 0.5 miles (Hiatt and Baker 1981). The WGFD indicates a well density of 8 wells per section creates a high level of impact for big game and that avoidance zones around mineral facilities overlap creating contiguous avoidance areas (WGFD 2004). A multi-year study on the Pinedale Anticline suggests not only do mule deer avoid mineral activities, but after 3 years of drilling activity the deer have not become accustomed to the disturbance (Madson 2005, Sawyer et al. 2006 and 2009).

4.7.2.2. Cumulative Effects

The cumulative effects associated with Alternative B are within the analysis parameters and impacts described in the PRB FEIS, p. 4-181 to 4-215.

4.7.2.3. Mitigation Measures

No mitigation is proposed with Alternative B.

4.7.2.4. Residual Effects

No residual impacts are anticipated.

4.7.3. Migratory Birds

4.7.3.1. Direct and Indirect Effects

The PRB FEIS discussed direct and indirect effects to migratory birds on pp. 4-231 to 4-235. BLM analyzed the effects to migratory birds from surface disturbing and disruptive activities associated with development of horizontal oil wells in the Sahara POD EA, WY-070-EA13-72, 2013, Section 4.6.2.2, pp. 31-33, and in the Bonita Federal Com 11H CX3, WY-070-390CX3-13-41, incorporated here by

reference. Effects and mitigation associated with this project are similar in nature, with the following additional site-specific information.

During the onsite, the BLM identified suitable nesting habitat present for several BLM sensitive sagebrush obligates. Construction of all of the well pads within the proposal and associated infrastructure will remove habitat and could kill BLM sensitive migratory birds, or destroy eggs, if the habitat is removed during the nesting season.

Heater treaters, and similar facilities with vertical open-topped stacks or pipes, can attract birds. Facilities without exclusionary devices pose a mortality risk. Once birds crawl into the stack, escape is difficult and the bird may become trapped (U.S. v. Apollo Energies Inc., 611 F.3d 679 (10th Cir. 2010); see also Colorado Oil and Gas Commission, Migratory Bird Policy, accessed February 13, 2012). To minimize these effects, the operator will equip all open-top pits, tanks, and pipes containing hydrocarbons with nets, screens, or other avian exclusion devices to prevent injury or death to migratory birds.

4.7.3.2. Cumulative Effects

The cumulative effects associated with alternative B are within the analysis parameters and impacts described in the PRB FEIS, p. 4-235.

4.7.3.3. Mitigation Measures

Construction of the DENBURY HD 2014 HDU 4135H, DENBURY HD 2014 HDU 4157H, and DENBURY HD 2014 HDU 5126H well pads would (vegetation removal) occur outside of the breeding season (May 1- July 31) since suitable nesting habitat for sagebrush obligates is present. This restriction would apply to habitat removal, unless a pre-construction nest search (within approximately 10 days of construction planned May 1-July 31) is completed. If surveys will be conducted, the operator will coordinate with BLM biologists to determine protocol. The nest search will consist of in areas where vegetation will be removed or destroyed.

To reduce the likelihood of a “take” under the MBTA, the BLM biologist recommends (per IM No. 2009-078) pad construction (vegetation removal) for the DENBURY HD 2014 HDU 5013H and DENBURY HD 2014 HDU 6332H to occur outside of the breeding season for the greatest quantity of BLM sensitive passerines (May 1- July 31) where since suitable nesting habitat for sagebrush obligates is present. This restriction would apply to habitat removal, unless a pre-construction nest search (within approximately 10 days of construction planned May 1-July 31) is completed. If surveys will be conducted, the operator will coordinate with BLM biologists to determine protocol. The nest search will consist of areas where vegetation will be removed or destroyed. If the operator does not adhere to the BLM recommendation, then there is a likelihood of “take” to occur under MBTA.

4.7.3.4. Residual Effects

Nests initiated after the first week in July may be destroyed by construction after August 1st. Migratory birds nesting adjacent to the well pad or road may be disturbed by construction and production activities. A timing limitation does nothing to mitigate loss and fragmentation of habitat. Suitability of the project area for migratory birds will be negatively affected due to habitat loss and fragmentation and proximity of human activities associated with oil and gas development.

4.7.4. Raptors

4.7.4.1. Direct and Indirect Effects

The PRB FEIS discussed direct and indirect effects to raptors (pp. 4-216 to 4-221). Effects to raptors from surface disturbing and disruptive activities associated with development of horizontal oil wells were analyzed in the Sahara POD EA, WY-070-EA13-72, 2013, Section 4.6.2.1, pp. 28-31, incorporated here by reference. During the onsite inspections, the BLM and the operator worked to reduce impacts to

raptors from placement of wells and infrastructure. The DENBURY HD 2014 HDU 6332H well is proposed within 0.5 mile and out of line of sight from nests #5746, 8379, 10626 and 8380. The DENBURY HD 2014 HDU 5013H well is proposed within 0.5 mile out of line of sight from nest #4383.

4.7.4.2. Cumulative Effects

The cumulative effects associated with alternative B are within the analysis parameters and impacts described in the PRB FEIS, p. 4-221.

4.7.4.3. Mitigation Measures

If the following mitigation is applied to the proposed project, then impacts to nesting raptors would be minimal. 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 (February 1-July 31) around active/biologically important raptor nests. Due to lack of surface jurisdiction, the DENBURY HD 2014 HDU 6332H and The DENBURY HD 2014 HDU 5013H well would have a recommended (per IM No. 2009-078) timing limiting restriction for surface disturbing activities. If the operator does not adhere to the BLM recommendation, then there is a likelihood of “take” to occur under MBTA

4.7.4.4. Residual Impacts

Even with timing restrictions, raptors may abandon nests due to foraging habitat alteration associated with development or sensitivity to well or infrastructure placement. All raptors using nests in the vicinity of the project would likely be impacted to some extent by the human disturbance associated with operation and maintenance of the project. Routine human activities near these nests can draw increased predator activity to the area and increase nest predation. Declines in breeding populations of some species that are more sensitive to human activities may occur.

4.8. Cultural Resources

4.8.1. Direct and Indirect Effects

BLM policy states that a decision maker’s first choice should be avoidance of historic properties (BLM Manual 8140.06(C)). If historic properties cannot be avoided, mitigation measures must be applied to resolve the adverse effect. Non eligible site(s) 48CA5556 will be impacted by the proposal. No historic properties will be impacted by the proposal. Following the State Protocol Between the Wyoming Bureau of Land Management State Director and The Wyoming State Historic Preservation Officer, Section VI(A)(1) the BLM notified the Wyoming State Historic Preservation Officer (SHPO) on April 30, 2014 that no historic properties exist in the area of potential effect (APE). If any cultural values (sites, features or artifacts) are observed during operation, they will be left intact and the Buffalo Field Manager notified. If human remains are noted, the procedures described in Appendix L of the PRB FEIS must be followed. Further discovery procedures are explained in Standard COA (General)(A)(1).

4.8.2. Cumulative Effects

Construction and development of oil and gas resources impacts cultural resources through ground disturbance, unauthorized collection, and visual intrusion of the setting of historic properties. This results in fewer archaeological resources available for study of past human life-ways, changes in human behavior through time, and interpreting the past to the public. Additionally, these impacts may compromise the aspects of integrity that make a historic property eligible for the NRHP. Recording and archiving basic information about archaeological sites and the potential for subsurface cultural materials in the proposed project area serve to partially mitigate potential cumulative effects to cultural resources.

Fee actions constructed in support of federal actions can result in impacts to historic properties. Construction of large plans of development on split estate often include associated infrastructure that is not permitted through BLM. Project applicants may connect wells draining fee minerals, or previously constructed pipelines on fee surface with a federal plan of development. BLM has no authority over such

development which can impact historic properties. BLM has the authority to modify or deny approval of federal undertakings on private surface, but that authority is limited to the extent of the federal approval. Historic properties on private surface belong to the surface owner and they are not obligated to preserve or protect them. The BLM may go to great lengths to protect a site on private surface from a federal undertaking, but the same site can be legally impacted by the landowner at any time. The cumulative effect of numerous federal approvals can result in impacts to historic properties. Archeological inventories reveal the location of sites and although the BLM goes to great lengths to protect site location data, information can potentially get into the wrong hands. BLM authorizations that result in new access can inadvertently lead to impacts to sites from increased visitation by the public.

4.8.3. Mitigation Measures

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

4.8.4. 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.

5. CONSULTATION/COORDINATION:

BLM Consulted or Coordinated with the Following on this Analysis; OSP (Onsite Presence):

Contact	Organization	OSP?	Contact	Organization	OSP?
Travis Bargsten	BLM – WY State Office	No	Phil Lowe	DOI – Office of the Solicitor	No
Bud Stewart	WY Game and Fish	Yes	Kyle Wood	Denbury Onshore, LLC	No

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