

U.S. Department of the Interior Bureau of Land Management

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Bill Barrett Corporation Proposes to Construct 4 New Well Pads and Drill 7 New Oil Wells on Split Estate in Uintah County, Utah

Location: Sections 13 and 24, T7S, R19E, SL B&M
Section 18 T7S, R20E, SL B&M.

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CHAPTER 1 INTRODUCTION

INTRODUCTION

This Environmental Assessment (EA) has been prepared by the Bureau of Land Management Vernal Field Office to analyze Bill Barrett Corporation's (BBC) Application(s) for Permit to Drill (APD), including roads, pipelines, well pads, and the associated infrastructure. The subject well(s) are located on split estate lands. The proposed well pads and the entire length of the proposed access roads and pipelines would be located on private land, with underlying Federal minerals. A Surface Use Agreement with the operator has been signed by the respective landowner(s) and has been submitted with the APD packages. A BLM right-of way (ROW) would not be required.

The well information is as follows:

| Well Identification | Surface Legal Location | Lease Number |
|----------------------------|------------------------|--------------|
| Aurora Federal 1-13D-7-19 | NE/NE Sec. 13 T7S R19E | UTU-76488 |
| Aurora Federal 8-13D-7-19 | NE/NE Sec. 13 T7S R19E | UTU-76488 |
| Aurora Federal 16-13D-7-19 | SE/SE Sec. 13 T7S R19E | UTU-76488 |
| Aurora Federal 1-24D-7-19 | SE/SE Sec. 13 T7S R19E | UTU-76488 |
| Aurora Federal 8-24D-7-19 | Lot 2 Sec. 24 T7S R19E | UTU-76488 |
| Aurora Federal 14-18D-7-20 | SE/SW Sec. 18 T7S R20E | UTU-85591 |
| Aurora Federal 15-18D-7-20 | SW/SE Sec. 18 T7S R20E | UTU-75092 |

The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions.

PURPOSE AND NEED FOR THE PROPOSED ACTION

The BLM decision to be made is whether or not to approve the APD(s). The purpose of the action is to allow the lessee to develop the Federal mineral lease(s) indicated above in an environmentally sound manner. The need for the action is established by BLM Onshore Orders (43 CFR 3160), which require the BLM to review and approve APDs producing from Federal mineral leases, including those leases with split estate lands. However, the BLM has no jurisdiction over surface impacts on these split estate lands.

SCOPING AND PUBLIC INVOLVMENT AND ISSUES

An on-site review of the APD(s) was conducted on November 26, 2014 and the surface owner(s) were invited to attend. The operator has provided certification that they have a surface owner's agreement from each of the landowners, which was received by the BLM on February 2, 2015 and March 9, 2015. No major issues were identified by the landowners. A cultural resource survey has been completed and cover page of the survey results was submitted with the APD package. No cultural resources eligible for listing under the National Historic Preservation Act (NHPA) were identified as a result of the survey.

The Interdisciplinary Checklist contained within the Utah NEPA Guidebook was not completed for this EA because the effects of the Proposed Action on the natural and physical environment cannot be meaningfully evaluated on lands outside of BLM's jurisdiction, other than for those resources carried

forward in detail in Chapters 3 and 4, because of lack of data, lack of authority to gather the data, and existence of the land owner's decision (BLM NEPA Handbook H-1790-1, Sections 3.1 and 6.4).

The Proposed Action was posted to the Utah BLM's NEPA Register March 31, 2015. No public interest has been expressed.

CHAPTER 2

PROPOSED ACTION AND ALTERNATIVES

DESCRIPTION OF PROPOSED ACTION

Bill Barrett Corporation (BBC) proposes to construct four new well pads and associated infrastructure (access roads and buried pipelines) on split estate (private/fee surface with underlying federal minerals) in Uintah County, Utah. Up to seven new oil wells would be drilled from the new well pads. The proposed project would result in approximately 19.707 acres of new surface disturbance. The following table summarizes the maximum proposed site dimensions.

Table 2-1. Maximum Proposed Site Dimensions

| Well ID | Well Pad / Reserve Pit | Access Road | Pipeline | Total |
|---|------------------------|-------------------|--------------------|---------------------|
| Aurora Federal 1-13D-7-19* Aurora Federal 8-13D-7-19 | 3.148 acres | 0.019 acre | 1.699 acres | 4.866 acres |
| Aurora Federal 16-13D-7-19* Aurora Federal 1-24D-7-19 | 2.53 acres | 0.017 acre | 3.543 acres | 6.09 acres |
| Aurora Federal 8-24D-7-19 | 4.263 acres | 0.144 acre | 0.793 acre | 5.20 acres |
| Aurora Federal 14-18D-7-20* Aurora Federal 15-18D-7-20 | 3.295 acres | 0.118 acre | 0.138 acre | 3.551 acres |
| TOTAL | 13.236 acres | 0.298 acre | 6.173 acres | 19.707 acres |

* The wells would be drilled from the same well pad, and would utilize the same access road and pipelines. No additional surface disturbance would occur as a result of the drilling of the additional well(s).

Well Pads and Reserve Pits

New surface disturbance from the construction of the well pad(s) and reserve pit(s) would be approximately 13.236 acres. However, total disturbance would be lessened when interim reclamation becomes successful. Surface and subsoil materials in the immediate project area would be used for construction. Topsoil would be saved for reclamation purposes only. The reserve pit would be fenced on three sides during drilling operations and on the fourth side when the rig moves off location. It would be fenced, and the fence maintained, until the pit is reclaimed within 180 days of the well going into production. The proposed Aurora Federal 16-13D-7-19, 1-24D-7-19, and 8-24D-7-19 wells would be drilled using a closed loop drilling system, and would not require a reserve pit. If ground water is encountered at any time during the construction of the Aurora Federal 1-13D-7-19, 8-13D7-19, 14-18D-7-20, and 15-18D-7-20 wells, then these would also be drilled using a closed loop system. Drill cuttings would be stored on the well pad in a bermed area, and produced fluids would be stored in steel tanks on location until construction of production facilities is completed.

All production facilities would be located on the disturbed portion of the well pad and a minimum of 25 feet from the toe of the back slope, preferably on cut, and towards the front of the well pad to maximize interim reclamation. A dike/berm (earthen or corrugated steel) large enough to hold 110% of the capacity of the largest tank would be constructed completely around those production facilities which contain fluids.

Access Roads

Approximately 432 feet of new access road would be needed to access the proposed location(s). Total new surface disturbance to the land from the new access road(s) would be approximately 0.298 acre. The proposed access roads would be located entirely on private surface. A BLM ROW would not be required.

The access roads would be crowned, ditched, and constructed with a permanent running surface of 18 feet and a maximum disturbed width of 30 feet. Approximately 12 feet of the access road corridor width would undergo reclamation following completion of the access road construction. If the reclamation efforts are successful then the disturbed acreage would be lessened to approximately 0.179 acre. Graveling or capping the roadbed would be performed as necessary to provide a well-constructed, safe road that minimizes the potential soil and vegetation losses. If construction occurs in winter months, then the proposed road would be cleared of any snow and allowed to dry completely prior to initiation of construction.

Pipelines

Approximately 8,963 feet of up to three buried pipelines would be installed as part of the Proposed Action. The proposed pipeline corridor would be located entirely on private surface; a BLM ROW would not be required. There would be one 12" steel natural gas gathering line, one 6" high-pressure flexible material water transportation line, and one 6" high-pressure flexible material natural gas or water transportation line. All lines would be buried in the same trench within the pipeline corridor. The pipeline corridor would have a 30 foot width. The total disturbance associated with construction and installation of the pipelines would be approximately 6.173 acres. Each pipeline would be pressure tested for leaks. After testing, site stabilization and reclamation would occur.

Interim and Final Reclamation

Upon well completion, the operator would reclaim the reserve pit in accordance with Onshore Orders, regulations, and the surface owner requirements. Also, any unused portion of the well pad not needed for continued operations would undergo interim reclamation practices. This must be addressed in the reclamation plan required under Onshore Order #1 section j of Surface Use Plan. Upon well abandonment, the operator would reclaim the well pad, access road, pipelines and power-line as directed by the surface owner or by the BLM AO if reclamation techniques are inadequate.

BBC has submitted site-specific Reclamation and Wildlife Enhancement plans for the proposed wells with the APDs. The plans outline the proposed site preparation, seeding, weed management, and success monitoring for interim and final reclamation on the locations.

NO ACTION ALTERNATIVE

Under the No Action alternative, the proposed well(s) and associated facilities would not be constructed or installed. The lease allows drilling to occur in the lease areas subject to the stipulations of the specific lease agreement. BLM can deny the APD if the proposal would violate lease stipulations, applicable laws and or regulations, and also can impose restrictions to prevent undue or unnecessary environmental degradation. If BLM were to deny the APD, the applicant could attempt to reverse the BLM's decision through administrative appeals. The outcome of that action is beyond the scope of this EA and cannot be projected or meaningfully analyzed at this time.

CHAPTER 3 AFFECTED ENVIRONMENT

Air Quality and Greenhouse Gases:

Air Quality: The Project Area is located in the Uinta Basin, a semiarid, mid-continental climate regime typified by dry, windy conditions, limited precipitation and wide seasonal temperature variations subject to abundant sunshine and rapid nighttime cooling. The Uinta Basin is designated as unclassified/attainment by the EPA under the Clean Air Act. This classification indicates that the concentration of criteria pollutants in the ambient air is below National Ambient Air Quality Standards (NAAQS), or that adequate air monitoring is not available to determine attainment.

NAAQS are standards that have been set for the purpose of protecting human health and welfare with an adequate margin of safety. Pollutants for which standards have been set include ground level ozone, (O₃), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and carbon monoxide (CO), and particulate matter less than 10 microns in diameter (PM₁₀) or 2.5 microns in diameter (PM_{2.5}). Airborne particulate matter consists of tiny coarse-mode (PM₁₀) or fine-mode (PM_{2.5}) particles or aerosols combined with dust, dirt, smoke, and liquid droplets. PM_{2.5} is derived primarily from the incomplete combustion of fuel sources and secondarily formed aerosols, whereas PM₁₀ is primarily from crushing, grinding, or abrasion of surfaces. **Table 3-1** lists ambient air quality background values for the Uinta Basin and NAAQS standards.

Table 3-1. Ambient Air Quality Background Values

| Pollutant | Averaging Period(s) | Uinta Basin Background Concentration (µg/m ³) | NAAQS (µg/m ³) |
|--|---------------------|---|----------------------------|
| SO ₂ | Annual | 0.8 ² | -- ¹ |
| | 24-hour | 3.9 ² | -- ¹ |
| | 3-hour | 10.1 ² | 1,300 |
| | 1-hour | 19.0 ² | 197 |
| NO ₂ | Annual | 8.1 ³ | 100 |
| | 1-hour | 60.2 ³ | 188 |
| PM ₁₀ | Annual | 7.0 ⁴ | -- ⁶ |
| | 24-hour | 16.0 ⁴ | 150 |
| PM _{2.5} | Annual | 9.4 ³ | 15 |
| | 24-hour | 17.8 ³ | 35 |
| CO | 8-hour | 3,450 ⁴ | 10,000 |
| CO | 1-hour | 6,325 ⁴ | 40,000 |
| O ₃ | 8-hour | 100.0 ^{3,5} | 75 |
| 1 – The 24-hour and annual SO ₂ NAAQS have been revoked by USEPA 2 – Based on 2009 data from Wamsutter Monitoring Station Data (USEPA AQS Database) 3 – Based on 2010/2011 data from Redwash Monitoring Station (USEPA AQS Database) 4 – Based on 2006 data disclosed in the Greater Natural Buttes FEIS. (BLM, 2012) 5 – Ozone is measured in parts per billion (ppb) 6 – The annual PM ₁₀ NAAQS has been revoked by USEPA | | | |

Existing point and area sources of air pollution within the Uinta Basin include the following:

- Exhaust emissions (primarily CO, NO_x, PM_{2.5}, and HAPs) from existing natural gas fired compressor engines used in transportation of natural gas in pipelines;
- Natural gas dehydrator still-vent emissions of CO, NO_x, PM_{2.5}, and HAPs;
- Gasoline and diesel-fueled vehicle tailpipe emissions of VOCs, NO_x, CO, SO₂, PM₁₀, and PM_{2.5};

- Oxides of sulfur (SO_x), NO_x, fugitive dust emissions from coal-fired power plants, and coal mining/ processing;
- Fugitive dust (in the form of PM₁₀ and PM_{2.5}) from vehicle traffic on unpaved roads, wind erosion in areas of soil disturbance, and road sanding during winter months; and,
- Long-range transport of pollutants from distant sources.

Two year-round air quality monitoring sites were established in summer 2009 near Red Wash (southeast of Vernal, Utah) and Ouray (southwest of Vernal). These monitors were certified as Federal Reference Monitors in fall of 2011, which means they can be used to make a NAAQS compliance determination. The complete EPA Ouray and Redwash monitoring data can be found at: <http://www.epa.gov/airexplorer/index.htm>

Both monitoring sites have recorded numerous exceedences of the 8-hour ozone standard during the winter months (January through March 2010, 2011, 2013, and 2014). It is thought that high concentrations of ozone are being formed under a “cold pool” process. This process occurs when stagnate air conditions form with very low mixing heights under clear skies, with snow-covered ground, and abundant sunlight. These conditions, combined with area precursor emissions (NO_x and VOCs), can create intense episodes of ozone. The high numbers did not occur in January through March 2012 due to a lack of snow cover. This phenomenon has also been observed in similar locations in Wyoming. Winter ozone formation is a newly recognized issue, and the methods of analyzing and managing this problem are still being developed. Existing photochemical models are currently unable to reliably replicate winter ozone formation. This is due to the very low mixing heights associated with unique meteorology of the ambient conditions. Further research is needed to definitively identify ozone precursor sources that contribute to observed ozone concentrations.

The UDAQ conducted limited monitoring of PM_{2.5} in Vernal, Utah in December 2006. During the 2006-2007 winter seasons, PM_{2.5} levels were higher than the PM_{2.5} health standards that became effective in December 2006. The PM_{2.5} levels recorded in Vernal were similar to other areas in northern Utah that experience wintertime inversions. The most likely causes of elevated PM_{2.5} at the Vernal monitoring station are those common to other areas of the western U.S. (combustion and dust) plus nitrates and organics from oil and gas activities in the Basin. PM_{2.5} monitoring that has been conducted in the vicinity of oil and gas operations in the Uinta Basin by the Red Wash and Ouray monitors beginning in summer 2009 have not recorded any exceedences of either the 24 hour or annual NAAQS.

HAPs are pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental impacts. The EPA has classified 187 air pollutants as HAPs. Examples of listed HAPs associated with the oil and gas industry include formaldehyde, benzene, toluene, ethylbenzene, isomers of xylene (BTEX) compounds, and normal-hexane (n-hexane). There are no applicable Federal or State of Utah ambient air quality standards for assessing potential HAP impacts to human health.

Greenhouse Gases: Greenhouse gases keep the planet's surface warmer than it otherwise would be. According to NOAA and NASA data, the Earth's average surface temperature has increased by about 1.2 to 1.4° F in the last 100 years. The eight warmest years on record (since 1850) have all occurred since 1998, with the warmest year being 1998. However, according to the British Meteorological Office's Hadley Centre (BMO 2009), the United Kingdom's foremost climate change research center, the mean global temperature has been relatively constant for the past ~~nine~~ 18 years after the warming trend from 1950 through 2000. Predictions of the ultimate outcome of global warming remain to be seen.

The analysis of the Regional Climate Impacts prepared by the U.S. Global Change Research Program (USGCRP) in 2009 suggests that recent warming in the region (including the project area) was nationally

among the most rapid. Past records and future projections predict an overall increase in regional temperatures, largely in the form of warmer nights and effectively higher average daily minimum temperatures. They conclude that this warming is causing a decline in spring snowpack and reduced flows in the Colorado River. The USGCRP projects a region-wide decrease in precipitation, although with substantial variability in interannual conditions. For eastern Utah, the projections range from an approximate 5 percent decrease in annual precipitation to decreases as high as 40 percent of annual precipitation.

Equilibrium climate sensitivity quantifies the response of the climate system to constant radiative forcing on multicentury time scales. It is defined as the change in global mean surface temperature at equilibrium that is caused by a doubling of the atmospheric CO₂ concentration. Equilibrium climate sensitivity is likely in the range 1.5°C to 4.5°C (high confidence), extremely unlikely less than 1°C (high confidence), and very unlikely greater than 6°C (medium confidence). The lower temperature limit of the assessed likely range is thus less than the 2°C in the AR4, but the upper limit is the same. This assessment reflects improved understanding, the extended temperature record in the atmosphere and ocean, and new estimates of radiative forcing. No best estimate for equilibrium climate sensitivity can now be given because of a lack of agreement on values across assessed lines of evidence and studies (IPCC, 2013).

Soils/Vegetation:

The proposed wells are located in Sections 13 and 24 of T7S, R19E, and Section 18 of T7S, R20E, Mer. SLB. The terrain is generally flat, and intersected by ephemeral drainages. The Project Area receives approximately 4-8 inches of precipitation per year on average. The dominant soil types in the Project Area are Ohtog-Parohtog complex (166), Parohtog loam (176), Shotnick sandy loam (206), Spitzen sand (215), and Tipperary loamy fine sand (229). The soils are described in Table 3-1.

Table 3-1. Soils in Project Area

| Soil Type and Slope | Landform and Elevation | Parent Material(s) | Surface Layer and Depth | Permeability and Drainage Class | Land Capability Classification | Ecological Site Classification |
|--|---------------------------------|--|--|--|---------------------------------|------------------------------------|
| Ohtog-Parohtog complex (166), 0-2% slopes | Alluvial flat 4,600-5,400 ft | Alluvium derived from sandstone, limestone, shale, and quartzite | Ohtog: Ap—0 to 8 inches; loam Parohtog: Ap—0 to 10 inches; loam | Ohtog: Moderately slow permeability; well drained Parohtog: Moderately slow permeability; moderately well drained | 2c irrigated 7c nonirrigated | Loamy Bottom (Basin Big Sagebrush) |
| Parohtog loam (176), 0-2% slopes | Alluvial flat 4,800-5,300 ft | Alluvium derived from sandstone, limestone, shale, and quartzite | A—0 to 7 inches; loam | Moderate permeability; somewhat poorly drained | 4w irrigated | Loamy Bottom (Basin Big Sagebrush) |
| Shotnick sandy loam (206), | Alluvial flat 4,700-5,500 ft | Eolian deposits and alluvium derived from | A—0 to 8 inches; | Moderately rapid permeability; | 2e irrigated 7e nonirrigated | Desert Sandy Loam (Indian |

| | | | | | | |
|---|------------------------------------|---|---|---|------------------------------------|---------------------------------|
| 2-4% slopes | | sandstone, limestone, and shale | sandy loam | well drained | | Ricegrass) |
| Spitzen sand (215), 1-4% slopes | Alluvial flat 4,700 -4,900 ft. | Eolian deposits over loamy alluvium derived from sandstone, shale, limestone, and quartzite | A1—0 to 2 inches; sand A2—2 to 5 inches; fine sand | Moderately slow permeability; moderately well drained | 4e if irrigated 7e nonirrigated | Desert Sand (Fourwing Saltbush) |
| Tipperary loamy fine sand (229), 1-8% slopes | Structural bench 4,700-5,800 ft | Eolian deposits derived from sandstone | A—0 to 4 inches; loamy fine sand | Rapid permeability; somewhat excessively drained | 3e irrigated 7e nonirrigated | Desert Sand (Fourwing Saltbush) |

A land capability classification of 2, 3 or 4 indicates that the soils are suitable for the mechanized production of commonly grown field crops for pasture and forest land. A level 7 classification indicates that the soils are not generally suited for the mechanized production of field crops without special management, but they are suitable for plants that provide a permanent cover, such as grasses and trees. The *c* capability subclass shows that the chief limitation is climate that is very cold or very dry. The *w* capability subclass shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage). The *e* capability subclass shows that the main hazard is the risk of erosion unless a close-growing plant cover is maintained.

The dominant and representative species of vegetation for the ecological site classifications of soils in the Project Area are listed in Table 3-2.

Table 3-2. Dominant Vegetation in Project Area

| Ecological Site Classification | Dominant/Representative Vegetation |
|--------------------------------------|---|
| Loamy Bottom (Basin Big Sagebrush) | Basin wildrye (<i>Leymus cinereus</i>), basin big sagebrush (<i>Artemisia tridentata ssp. tridentata</i>), muttongrass (<i>Poa fendleriana</i>), needleandthread (<i>Hesperostipa comata</i>), western wheatgrass (<i>Pascopyrum smithii</i>), Indian ricegrass (<i>Achnatherum hymenoides</i>), rubber rabbitbrush (<i>Chrysothamnus nauseosus</i>) |
| Desert Sandy Loam (Indian Ricegrass) | Indian ricegrass (<i>Achnatherum hymenoides</i>), galleta (<i>Pleuraphis jamesii</i>), fourwing saltbush (<i>Atriplex canescens</i>), shadscale saltbush (<i>Atriplex confertifolia</i>), Torrey's jointfir (<i>Ephedra torreyana</i>), globemallow (<i>Sphaeralcea sp.</i>), winterfat (<i>Krascheninnikovia lanata</i>) |
| Desert Sand (Fourwing Saltbush) | Indian ricegrass (<i>Achnatherum hymenoides</i>), fourwing saltbush (<i>Atriplex canescens</i>), needleandthread (<i>Hesperostipa comata</i>), Mormon tea (<i>Ephedra viridis</i>), galleta grass (<i>Pleuraphis jamesii</i>), sand dropseed (<i>Sporobolus cryptandrus</i>), spike dropseed (<i>Sporobolus contractus</i>), winterfat (<i>Krascheninnikovia lanata</i>). |

In addition to the vegetation listed in the table above, the species kochia (*Bassia scoparia*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*), western tansy mustard (*Descurainia pinnata*), salt grass

(Distichlis spicata), broom snakeweed (*Gutierrezia sarothrae*), common sunflower (*Helianthus annuus*), alfalfa (*Medicago sativa*), plains pricklypear (*Opuntia polyacantha*), Fremont cottonwood (*Populus fremontii*), and common dandelion (*Taraxacum officinale*) were also documented in the Project Area. The Project Area has been subject to agricultural use in the past, and is dominated by introduced and non-native plant species.

The Utah Class C state noxious weeds houndstongue (*Cynoglossum officinale*) and saltcedar (*Tamarix ramosissima*) were identified during the onsite and/or have been previously documented on the BLM land adjacent to the Project Area. The invasive species Russian thistle (*Salsola tragus*) was also identified in the Project Area during the onsite. These species are considered undesirable and would be controlled by Bill Barrett Corporation. Any observed instances of noxious weed growth in the Project Area during the life of the project would also be controlled by the operator.

CHAPTER 4 ENVIRONMENTAL EFFECTS

PROPOSED ACTION DIRECT AND INDIRECT EFFECTS

Air Quality and Greenhouse Gases:

Air Quality: This Proposed Action is considered to be a minor air pollution source under the Clean Air Act at present control technology on some emissions sources (e.g. drill rigs) is not required by regulatory agencies. The Proposed Action would result in different emission sources associated with two project phases: well development and well production. Annual estimated emissions from the Proposed Action are summarized in **Table 4-1**.

Table 4-1. Proposed Action Annual Emissions (tons/year) ¹

| Pollutant | Development | Production | Total |
|-------------------|-------------|------------|---------|
| NO _x | 24.304 | 6.8124 | 31.1164 |
| CO | 7.7084 | 12.8352 | 20.5436 |
| SO _x | 0.1232 | 0.00252 | 0.12572 |
| PM ₁₀ | 2.842 | 38.0072 | 40.8492 |
| PM _{2.5} | 0.714 | 4.1916 | 4.9056 |
| VOC | 2.3268 | 12.8324 | 15.1592 |
| Benzene | 0.0084 | 0.0308 | 0.0392 |
| Toluene | 0.0056 | 0.0196 | 0.0252 |
| Ethylbenzene | 0 | 0 | 0 |
| Xylene | 0.0028 | 0.0028 | 0.0056 |
| n-Hexane | 0 | 0.014 | 0.014 |
| Formaldehyde | 0 | 0.28 | 0.28 |

¹ Emissions include 7 producing well(s) and associated operations traffic during the year in which the project is developed.

Well development includes NO_x, SO₂, and CO tailpipe emissions from earth-moving equipment, vehicle traffic, drilling, and completion activities. Fugitive dust concentrations would occur from vehicle traffic on unpaved roads and from wind erosion where soils are disturbed. Drill rig and fracturing engine operations would result mainly in NO_x and CO emissions, with lesser amounts of SO₂. These emissions would be short-term during the drilling and completion phases.

During well production, continuous NO_x, CO, VOC, and HAP emissions would originate from well pad separators, condensate storage tank vents, and daily tailpipe and fugitive dust emissions from operations traffic. Road dust (PM₁₀ and PM_{2.5}) would also be produced by vehicles servicing the wells.

Under the Proposed Action, emissions of NO_x and VOC, ozone precursors, are 31.1164 tons/yr for NO_x, and 15.1592 tons/yr of VOC (**Table 4-1**). Emissions would be dispersed and/ or diluted to the extent where any local ozone impacts from the Proposed Action would be indistinguishable from background conditions.

The primary sources of HAPs are from oil storage tanks and smaller amounts from other production equipment. Small amounts of HAPs are emitted by construction equipment. These emissions are estimated to be minor and less than 1 ton per year.

Greenhouse Gases: The assessment of greenhouse gas emissions and climate change remains in its earliest stages of formulation. Applicable EPA rules do not require any controls and have yet to establish any emission limits related to GHG emissions or impacts. The lack of scientific models that predict climate change on regional or local level prohibits the quantification of potential future impacts of decisions made at the local level, particularly for small scale projects such as the Proposed Action. Drilling and development activities from the Proposed Action are anticipated to release a negligible amount of greenhouse gases into the local air-shed.

Mitigation:

- All internal combustion equipment would be kept in good working order.
- Water or other approved dust suppressants would be used at construction sites and along roads, as determined appropriate by the Authorized Officer.
- Open burning of garbage or refuse would not occur at well sites or other facilities.
- Drill rigs would be equipped with Tier II or better diesel engines
- Low bleed pneumatics would be installed on separator dump valves and other controllers.
- During completion, no venting would occur, and flaring would be limited as much as possible. Production equipment and gathering lines would be installed as soon as possible.
- Telemetry will be installed to remotely monitor and control production.
- All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horse power must not emit more than 2 grams of NOx per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower-hour.
- All new and replacement internal combustion gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 grams of NOx per horsepower-hour.
- Green completions would be used for all well completion activities where technically feasible.
- Enhanced VOC emission controls with 95% control efficiency would be employed on production equipment having a potential to emit greater than 5 tons per year.

Soils/Vegetation:

During construction, the soils in the Project Area would be stripped of vegetation, moved around and compacted until the road and location are formed. Topsoil would be separated from other soils and be used for interim and final reclamation only. If topsoil is to be stored for a long period, protection/stabilization of topsoil must take place to prevent further losses of topsoil from erosional processes. The Proposed Action alternative would result in approximately 19.707 acres of new disturbance. Upon well completion, the reserve pits would be reclaimed in accordance with Onshore Order #1 regulations and the surface owner's directions, which includes Bill Barrett Corporation's surface operating plan. Upon well abandonment, the well pads, roads, and pipelines would be reclaimed in accordance with the surface owner's directions, and BBC's site specific reclamation plans. Site specific reclamation plans were included with the Applications for Permit to Drill (APD) submitted for the wells in the Proposed Action.

NO ACTION DIRECT AND INDIRECT EFFECTS

Air Quality and Greenhouse Gases: Under the No Action Alternative, the proposed well(s) would not be permitted, so no emissions would occur.

Soils/Vegetation: No surface disturbance would occur under the No Action alternative because the proposed well(s) would not be approved. Therefore there would be no effects to soil and vegetation. Soils and vegetation in the area would in their current condition. Erosion rates would remain at current levels.

CUMULATIVE EFFECTS

Air Quality and Greenhouse Gases:

Air Quality; The cumulative impact area for air quality is the Uinta Basin, plus all regional Class I areas and other environmentally sensitive areas (e.g., national parks and monuments, wilderness areas, etc.) near the Uinta Basin. The Air Resource Management Strategy (ARMS) Modeling Project is a cumulative assessment of potential future air quality impacts associated with predicted oil and gas activity in the Uinta Basin (BLM, 2011). Consequently, past, present and reasonably foreseeable wells in the Uinta Basin are a part of the cumulative actions considered in this analysis. The ARMS is incorporated by reference and summarized below.

The ARMS Modeling Project predicted the following impacts to air quality and air quality related values for the 2010 typical year and four 2021 future year scenarios: 2021 on-the-books (OTB); 2021 Scenario 1 (NO_x controls); 2021 Scenario 2 (VOC controls); and 2021 Scenario 3 (NO_x and VOC controls).

- Ozone
 - The highest modeled ozone occurs in the Uinta Basin study area regardless of model scenario, and all scenarios predict exceedences of the ozone NAAQS and state AAQS in the Uinta Basin.
 - In the Uinta Basin, the ozone concentrations are highest during the winter period. In Class I and Class II areas outside the Uinta Basin study area, ozone concentrations are highest during the summer period.
 - During non-winter months in the Uinta Basin the model predicts that ozone may exceed the NAAQS and state AAQS (Ambient Air Quality Standards); however, model-adjusted results from the MATS tool (which accounts for model performance biases) indicate that non-winter ozone concentrations are below the NAAQS and state AAQS for all monitors and areas analyzed. Also, the 2021 scenarios have minimal effect on model-predicted ozone concentrations during non-winter months.
 - 2021 Scenario 2 tends to have the lowest 8-hour ozone concentration relative to all other 2021 scenarios (4th highest daily maximum is 3 ppb lower compared to the 2021 OTB Scenario). When comparing Scenario 2 to the OTB Scenario, a potential reduction in ozone concentrations occurs in the vicinity of the Ouray site (where the concentrations are already largest). There is no predicted ozone disbenefit associated with Scenario 2 mitigation measures (i.e., there is no area with predicted ozone increases relative to the OTB Scenario). This supports the assessment that peak ozone impacts are in VOC-limited areas.
 - 2021 Scenarios 1 and 3 are predicted to have higher ozone impacts than either the 2010 Typical year and the 2021 OTB Scenario. Both scenarios predict a relatively large increase in ozone concentrations within the vicinity of Ouray indicating potential ozone disbenefits associated with NO_x control mitigation measures.
- NO₂, CO, SO₂, PM_{2.5}, and PM₁₀
 - There are seven monitoring stations within the 4- km domain with daily PM_{2.5} concentrations that exceed the NAAQS and state AAQS in the baseline emissions inventory.

- All modeled NO₂, CO, SO₂, PM_{2.5}, and PM₁₀ values are well below the NAAQS and state AAQS in the Uinta Basin.
- The model-predicted PM_{2.5} and PM₁₀ concentrations may underestimate future impacts due to a negative model bias throughout the year in the 4-km domain with the largest bias occurring in summer (AECOM and STI 2014).
- Results from the MATS tool (which accounts for model performance biases) indicate that PM_{2.5} concentrations may exceed the NAAQS and state AAQS for select monitors and assessment areas in the 2010 Typical year. All 2021 scenarios predict that only one of these monitoring station would continue to exceed the NAAQS and state AAQS.
- No monitoring stations within the 4-km domain exceed the annual PM_{2.5} NAAQS and state AAQS during the 2010 typical or 2021 Scenarios.
- Two unmonitored areas within the Uinta Basin exceed the annual PM_{2.5} NAAQS and state AAQS during the 2010 typical year, and impacts in these areas tend to increase under 2021 Scenarios 1 and 2. Under 2021 Scenario 3, the annual PM_{2.5} impacts decrease in the Uinta Basin due to combustion control measures.
- The 2021 scenarios generally have lower NO₂, CO, SO₂, PM_{2.5}, and PM₁₀ concentrations than the 2010 Typical Year scenario, except for within the Uinta Basin.
- Under the 2021 scenarios, all assessment areas are within the PSD (Prevention of Significant Deterioration) increments for annual NO₂, 3-hour SO₂, annual SO₂, and annual PM₁₀.
- Under the 2021 scenarios, most assessment areas exceed the 24-hour PM_{2.5} PSD increment.
- Visibility
 - Visibility conditions in Class I and sensitive Class II areas generally show improvement in the 2021 Scenarios relative to the 2010 Typical Year.
 - There also are no substantial differences in the 20th percentile best and worst visibility days between the 2021 Scenarios.
- Deposition and Acid Neutralizing Capacity
 - Results generally show a decrease in deposition for the 2021 Scenarios relative to the 2010 Typical Year.
 - The differences in estimated deposition between the 2021 Scenarios are generally very small.
 - Acid Neutralizing Capacity change at all seven sensitive lakes exceeds the 10 percent limit of acceptable change for all model scenarios.

It is anticipated that the impact to ambient air quality and air quality related values associated with the Proposed Action would be indistinguishable from and dwarfed by the model and emission inventory scope and margin of error. The No Action alternative would not result in an accumulation of impacts.

Greenhouse Gases: It is not currently possible to determine a climate change impact from project specific GHG emissions, nor is it possible to assign a significance value to project specific GHG emissions. GHG emissions will be reported per guidance established by CEQ and the Interagency Air Quality MOU (USDA/USDOJ, 2011). Drilling and development activities from the Proposed Action are anticipated to release a negligible amount of greenhouse gases, into the local airshed, resulting in a negligible cumulative impact. The No Action Alternative would not result in an accumulation of impacts.

Soils/Vegetation:

According to UDOGM GIS data, there are 15,701 wells in the categories of producer, shut-in, temporarily abandoned, active service, approved, drilling, inactive service, and drilling operations suspended. 2,575 of these are in the plugged and abandoned designation, meaning that proper ecological restoration should

have been validated by the BLM. Of these, 18.9% or 2,961 are directional or horizontal wells on existing wells pads with minimal or no disturbance. Of the productive wells, 5,565 are gas wells and 3,471 are oil wells. The total existing oil and gas development is estimated to be 23,811 acres; 23,493 acres for wells and 318 acres for gas plants/compressors stations.

Foreseeable BLM wells equal 25,721 on 14,137 new well pads and UDOGM wells equal 2,696 well pads on 1,659 new well pads. Totaling, 28,417 wells on 15,796 new well pads, which equals 81,981 acres of disturbance or 43,625 acres if successful interim reclamation is completed.

Assuming average disturbance for a new well equals 5.2 acres or 2.6 acres if interim reclamation is successful, pending NEPA projects equal 72,744 acres of construction disturbance, which if reclamation practices are successful would decrease the amount to 39,267 acres for the life of the project. All oil and gas related disturbances that exist or are foreseeable equal 81,981 or 67,436 if successful interim reclamation is completed.

Cumulative impacts to soils and vegetation typical of oil and gas field development include: removal of native vegetation and disturbance to soils which are generally very thin, slow to develop, and difficult to reclaim due to arid climate, low average precipitation per year, erosional forces, microbial breakdown, leaching of soils, and low organic content. The Proposed Action would result in 19,707 acres of additional disturbance to soils and vegetation. However, it is difficult to make a determination of the effects on lands not designated as BLM lands. The No Action Alternative would not result in an accumulation of impacts.

CHAPTER 5 TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED

| Table 5-1. Tribes, Individuals, Organizations, or Agencies Consulted | | |
|---|--|---|
| <i>Name/Agency</i> | <i>Authority</i> | <i>Result</i> |
| Private Landowner: Shane Frost | BLM requires that the Operator engage the Surface Owner in negotiations for the purpose of obtaining a surface owner agreement or waiver for access. | Private Surface Use Agreement received on 2/2/2015. |
| Private Landowner: Green Farm Management Corporation | BLM requires that the Operator engage the Surface Owner in negotiations for the purpose of obtaining a surface owner agreement or waiver for access. | Private Surface Use Agreement received on 2/2/2015. |
| Private Landowner: O.S. Wyatt Jr./Lazy 3X Sweetwater Ranch LLC | BLM requires that the Operator engage the Surface Owner in negotiations for the purpose of obtaining a surface owner agreement or waiver for access. | Private Surface Use Agreement received on 3/9/2015. |

CHAPTER 6 LIST OF PREPARERS

| Table 6-1. List of Preparers | | |
|-------------------------------------|-----------------------------|-------------------------|
| <i>Name</i> | <i>Title</i> | <i>Responsibilities</i> |
| Christine Cimiluca | Natural Resource Specialist | Team Lead |

CHAPTER 7

REFERENCES

References

AECOM and STI. 2014. Final Utah Air Resource Management Strategy Modeling Project Impact Assessment Report. http://www.blm.gov/ut/st/en/prog/more/air_quality/airprojs.html

BLM. 2012. Final Environmental Impact Statement for the Greater Natural Buttes

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British Meteorological Office (BMO). 2009. British Meteorological Office's Hadley Centre, 2009. Accessed January 2009 at <http://www.metoffice.gov.uk/climatechange/science/monitoring/>.

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**FINDING OF NO SIGNIFICANT IMPACT
AND
DECISION RECORD**

***Bill Barrett Corporation Proposes to Construct 4 New Well Pads and Drill
7 New Oil Wells on Split Estate in Uintah County, Utah***
DOI-BLM-UT-G010-2015-0100-EA

Finding of No Significant Impact:

Based on the analysis of potential environmental impacts contained in the attached environmental assessment, and considering the significance criteria in 40 CFR 1508.27, I have determined that the action will not have a significant effect on the human environment. An environmental impact statement is therefore not required.

/s/ Jerry Kenczka

4/3/2015

Authorized Officer (signature)

Date of signature

Decision Record:

It is my decision to authorize Bill Barrett Corporation's proposed split estate well(s) as described in the Proposed Action of DOI-BLM-UT-G010-2015-0100-EA.

| Well Identification | Surface Legal Location | Lease Number |
|----------------------------|-------------------------------|---------------------|
| Aurora Federal 1-13D-7-19 | NE/NE Sec. 13 T7S R19E | UTU-76488 |
| Aurora Federal 8-13D-7-19 | NE/NE Sec. 13 T7S R19E | UTU-76488 |
| Aurora Federal 16-13D-7-19 | SE/SE Sec. 13 T7S R19E | UTU-76488 |
| Aurora Federal 1-24D-7-19 | SE/SE Sec. 13 T7S R19E | UTU-76488 |
| Aurora Federal 8-24D-7-19 | Lot 2 Sec. 24 T7S R19E | UTU-76488 |
| Aurora Federal 14-18D-7-20 | SE/SW Sec. 18 T7S R20E | UTU-85591 |
| Aurora Federal 15-18D-7-20 | SW/SE Sec. 18 T7S R20E | UTU-75092 |

Summary of the Selected Alternative:

This decision includes the following components:

Maximum Proposed Site Dimensions

| Well ID | Well Pad / Reserve Pit | Access Road | Pipeline | Total |
|----------------------------|-------------------------------|--------------------|-----------------|--------------|
| Aurora Federal 1-13D-7-19* | 3.148 acres | 0.019 acre | 1.699 acres | 4.866 acres |

| | | | | |
|---|---------------------|-------------------|--------------------|---------------------|
| Aurora Federal 8-13D-7-19 | | | | |
| Aurora Federal 16-13D-7-19* Aurora Federal 1-24D-7-19 | 2.53 acres | 0.017 acre | 3.543 acres | 6.09 acres |
| Aurora Federal 8-24D-7-19 | 4.263 acres | 0.144 acre | 0.793 acre | 5.20 acres |
| Aurora Federal 14-18D-7-20* Aurora Federal 15-18D-7-20 | 3.295 acres | 0.118 acre | 0.138 acre | 3.551 acres |
| TOTAL | 13.236 acres | 0.298 acre | 6.173 acres | 19.707 acres |

* The wells would be drilled from the same well pad, and would utilize the same access road and pipelines. No additional surface disturbance would occur as a result of the drilling of the additional well(s).

Rationale for the Decision:

The proposed well(s) and related facilities meet the BLM's purpose and need to allow the lessee to develop the subject mineral lease indicated above in an environmentally sound manner. The need for the action is established by BLM Onshore Orders (43 CFR 3160) which require BLM approval of APDs on a Federal Lease, including those leases with split estate.

An on-site review of the APD(s) was held on November 26, 2014 and the surface owners were invited to attend. The operator has provided certification that they have a surface use agreement from all landowners, which were received by the BLM on February 2, 2015 and March 9, 2015. No major issues were identified by the surface owner(s).

The above factors and the analysis contained in DOI-BLM-UT-G010-2015-0100-EA for Bill Barrett Corporation's proposed well(s) were carefully considered and evaluated. In addition, the APD and surface use agreement were reviewed. All reports were read and the information contained weighed in determining the appropriateness of the decision stated above.

/s/ Jerry Kenczka

4/3/2015

Authorized Officer (signature)

Date of signature

Appeals:

This decision is effective upon the date it is signed by the Authorized Officer. The decision is subject to appeal. Under BLM regulation, 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, Utah State Office, P.O. Box 45155, Salt Lake City, Utah, 84145-0155, within 20 business days of the date of this Decision is received or considered to have been received.

If you wish to file a petition for stay, the petition for stay should accompany your notice of appeal and shall show sufficient justification based on the following standards:

1. The relative harm to the parties if the stay is granted or denied;
2. The likelihood of the appellant's success on the merits';
3. The likelihood of irreparable harm to the appellant of resources if the stay is not granted; and
4. Whether the public interest favors granting the stay.

ATTACHMENT 1 –

STIPULATIONS / CONDITIONS OF APPROVAL

Company/Operator: Bill Barrett Corporation (BBC)
Well Name & Number: Aurora Federal 1-13D-7-19, 8-13D-7-19, 16-13D-7-19, 1-24D-7-19, 8-24D-7-19, 14-18D-7-20, and 15-18D-7-20
Surface Ownership: Private: Shane Frost, O.S. Wyatt Jr. and Green Farm Management Corporation
Lease Number: UTU-76488, UTU-75092, and UTU-85591
Location(s): Sec. 13 and 24 of T7S, R19E, Mer. SLB
Sec. 18 of T7S, R20E, Mer. SLB

CONDITIONS OF APPROVAL:

- In the case of any deviation from the submitted APD(s), which includes BBC's surface use plan and any applicable ROW applications, the operator will notify the BLM in writing and will receive written authorization of any such change with appropriate authorization.
- The operator will implement "Safety and Emergency Plan." The operator's safety director will ensure its compliance.

Air Quality

- All internal combustion equipment would be kept in good working order.
- Water or other approved dust suppressants would be used at construction sites and along roads, as determined appropriate by the Authorized Officer.
- Open burning of garbage or refuse would not occur at well sites or other facilities.
- Drill rigs would be equipped with Tier II or better diesel engines
- Low bleed pneumatics would be installed on separator dump valves and other controllers.
- During completion, no venting would occur, and flaring would be limited as much as possible. Production equipment and gathering lines would be installed as soon as possible.
- Telemetry will be installed to remotely monitor and control production.
- All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horsepower must not emit more than 2 grams of NOx per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower-hour.
- All new and replacement internal combustion gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 grams of NOx per horsepower-hour.
- Green completions would be used for all well completion activities where technically feasible.
- Enhanced VOC emission controls with 95% control efficiency would be employed on production equipment having a potential to emit greater than 5 tons per year.

Construction

- The private landowner(s) will be notified by BBC prior to commencement of construction of the well pad and related infrastructure.

- All operator employees and/or authorized personnel (sub-contractors) in the field will have approved applicable APD's, COAs, and ROW permits/authorizations on their person(s) during all phases of construction.
- All vehicular traffic, personnel movement, construction/restoration operations should be confined to the area examined and approved, and to the existing roadways and/or evaluated access routes.
- Roads shall be crown and ditched to divert any runoff from pooling on the road surface itself, this also aids in lessening erosion on the road and disturbed area. Wing ditches can be installed to also aid in controlling runoff from affecting the proposed road. These should be spaced to adequately catch any runoff along the ditches and aid in diverted water to the surrounding vegetation.
- The operator must conduct operations to minimize adverse effects to surface and subsurface resources, prevent unnecessary surface disturbance, and conform to currently available technologies and practices.
- If cattleguards or gates are required along the access roads construction will be to BLM/USFS Gold Book standards or better.
- If culverts are required along the proposed access road(s), they will be a minimum of 18 inches in diameter and installed to meet BLM/USFS Gold Book standards.
- A minimum 16 mil liner is required for the reserve pits.

Reclamation and Vegetation

- BBC has submitted a site-specific Reclamation and Wildlife Enhancement Plan with the APD. If deviations are made from this plan, a Sundry Notice (Form 3160-5) should be submitted to the BLM and approved by the Authorized Officer (AO).
- Noxious and invasive weeds will be treated, monitored, and controlled along both the access road and pipeline routes, and on the well pad. The Utah Class C state noxious weeds houndstongue (*Cynoglossum officinale*) and saltcedar (*Tamarix ramosissima*) were identified during the onsite. These species are considered undesirable and would be controlled by Bill Barrett Corporation. Any observed instances of noxious weed growth in the Project Area during the life of the project would also be controlled by the operator.
- Minimal vegetation removal will occur around the well pad to lessen the visual impact and to aid in re-vegetation efforts in the future.
- Operator will ensure topsoil stability on location and use topsoil for interim reclamation as soon as possible to maintain viability of topsoil resource. Topsoil piles will be "track-walked," crusted and seeded to prevent topsoil erosion.
- Whenever feasible, tanks and other equipment needed for production activities should be located toward the entrance (front) of the well pad in order to maximize interim reclamation.
- Site reclamation would be accomplished for portions of the well pad not needed for production, within 6 months of completion, weather permitting. This also includes any roads, and pipeline areas that have been disturbed as well. Roads and pipeline disturbances can undergo reclamation

immediately after the pipeline is installed and after the roads are built. Please contact the landowner or the BLM for possible seed mixes to use in the project area. Seeds should be planted in August and prior to ground freeze. Non-natives can be used; however lbs/ac must be kept low to minimize the chance of a monoculture.

Visual Resources

- All permanent (on site for 6 months or longer) structures constructed or installed (including pumping units) will be painted Covert Green in order to blend with the surrounding vegetation. All facilities will be painted within 6 months of installation. Facilities required to comply with the Occupational Safety and Health Act (OSHA) are excluded.

Site-Specific Conditions of Approval

Aurora Federal 1-13D-7-19 and 8-13D-7-19:

- Minimum 16 mil. liner is required for reserve pits
- If groundwater is encountered at any time during construction activities, then all activity must stop and the well(s) must be drilled using a closed loop system rather than a reserve pit.
- The tree present within the disturbance boundary will be removed.
- A significant earthen berm (at least 3 feet in width) will be constructed due to location proximity to Pelican Lake
- Water trough will be moved to the west per private landowner request

Aurora Federal 14-18D-7-20 and 15-18D-7-20:

- Minimum 16 mil. liner is required for reserve pits
- If groundwater is encountered at any time during construction activities, then all activity must stop and the well(s) must be drilled using a closed loop system rather than a reserve pit.
- The tree present within the disturbance boundary will be removed.
- A significant earthen berm (at least 3 feet in width) will be constructed due to location proximity to Pelican Lake
- Water trough will be moved to the west per private landowner request

Aurora Federal 16-13D-7-19 and 1-24D-7-19:

- A closed loop system is required
- A significant earthen berm (at least 3 feet in width) will be constructed due to location proximity to Pelican Lake
- The tree present within the disturbance boundary will be removed.

- All construction activities will avoid irrigation system shown in well plats, per private landowner request.

Aurora Federal 8-24D-7-19:

- A closed loop system is required
- A significant earthen berm (at least 3 feet in width) will be constructed due to location proximity to Pelican Lake
- The tree present within the disturbance boundary will be removed.