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Colorado State Office

Colorado River Valley Field Office January 2014

Proposed Action
Jackson Gulch Master Development Plan for Natural Gas Exploration and Development
Sections 28, 33, 34, and 35, Township 6 South, Range 91 West
Garfield County, Colorado

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Silt, Colorado

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1. INTRODUCTION

Bill Barrett Corporation (BBC) is proposing a Master Development Plan (MDP) to drill natural gas wells from eight surface locations on approximately 40 acres of new disturbance in Township 6 South (T6S), Range 91 West (R91W), Sections 28, 33, 34, and 35, Sixth Principal Meridian, in the Piceance Basin, approximately 6 miles southwest of New Castle, Colorado. This Proposed Action, referred to as the Jackson Gulch Master Development Plan, arises from results of previous natural gas drilling that successfully demonstrated the potential for economically viable reserves of natural gas in the area.

The project area lies on a combination of Federal surface administered by the Bureau of Land Management (BLM) and private surface owned by Circle B Land Company, LLC, a wholly owned subsidiary of BBC. The project area is underlain by Federal mineral estate. If approved as proposed, project implementation would result in constructing, drilling, completing, and operating up to 127 Federal wells from eight proposed locations. Well pad locations on Federal lands fall within Federal oil and gas leases COC41048, COC51440, COC66718, and COC58668 (Figure 1). BBC would propose year-round drilling and completions for these facilities and would provide a wildlife habitat mitigation plan to the BLM for review and approval as appropriate based on activity needs during annual big-game winter stipulation periods. The habitat mitigation plan would be developed to fully mitigate any potential wildlife impacts by improving and expanding winter habitat conditions and water availability in the area. The minimum goal of mitigation is to provide for no "net impacts" to wildlife.

Access roads, natural gas gathering pipelines, and water pipelines for produced and well stimulation water are included as part of this Proposed Action. Surface facilities needed at each pad in addition to wellheads are planned to include separation/dehydration units, gas metering units, combustors, radio antennas, solar panel brackets, and aboveground tanks for storage of condensate and produced water. Each pad may also have a cuttings containment area for the disposal of drill cuttings. Produced water from the wells would be transported by buried pipeline or by truck to BBC's water management facilities located south of Silt or to a commercial disposal facility. Small natural gas compressor units may be necessary to power well gas lifts, and would be housed in sound-absorbing buildings to reduce noise coming from the well location.

Following completion activities at a pad, areas not needed during production would undergo interim reclamation using methods, standards, and plant species specified by the BLM. When all of the wells at a pad are no longer producing economic quantities of gas, the wells would be plugged and abandoned, and the pad would undergo final reclamation.

2. PURPOSE AND NEED

The purpose of the proposal is to develop oil and gas resources on Federal leases COC41048, COC51440, COC66718, and COC58668 consistent with existing Federal lease rights. Specifically, the purpose is to drill wells to explore for, test, and develop natural gas resources in a variety of geologic settings, differing stratigraphic targets, and various structural settings assuming it is commercially viable in this area.

The need for the proposed project is for BBC to fulfill its obligations and responsibilities under its Federal oil and gas lease requirements to explore, develop, and test hydrocarbon reserves by drilling for commercial quantities of natural gas or oil resources to market to the public. In addition, if the proposed wells are productive, the proposed project would:

- generate Federal, state, and county royalty revenues and/or taxes
- support local economies by providing and maintaining employment opportunities and expanding the local tax base

- contribute to available natural gas or oil supply for the national market
- reduce dependence on potentially unstable foreign sources of energy
- contribute to the available supply of a clean-burning fuel for the New Energy Economy

BLM's approval of exploration and production from Federal oil and gas leases is an integral part of BLM's oil and gas program under authority of the Mineral Leasing Act of 1920 (MLA) (30 United States Code [U.S.C.] § 181 et seq.), as amended by the Federal Land Policy and Management Act of 1976 (FLPMA) and the Federal Onshore Oil and Gas Leasing Reform Act of 1987. The intent of the MLA is to allow and encourage lessees to explore for oil and gas underlying public lands. FLPMA mandates that BLM manage public lands on the basis of multiple use (43 U.S.C. 1701(a)(7)). Minerals are identified as one of the principal uses of public lands under Section 103 of FLPMA (43 U.S.C. 1702(c)).

The BLM oil and gas leasing program encourages development of domestic oil and gas reserves and the reduction of U.S. dependence on foreign energy sources. BLM would consider approval of the Proposed Action in a manner that avoids undue or unnecessary degradation of public lands, as required under FLPMA, and that is consistent with the Comprehensive National Energy Strategy announced by the U.S. Department of Energy (DOE 1998), the Energy Policy and Conservation Act (42 U.S.C. 6201), and the Energy Policy Act of 2005 (Public Law 109-58).

Instead of structuring the development of these leases as a series of individual actions, the current Glenwood Springs Field Office (now the Colorado River Valley Field Office) land use plan (BLM 1984, revised 1988), amendments to that plan for oil and gas exploration and development (BLM 1991, 1999a), and BLM regulations specify the use of multi-well development plans to more effectively manage the development of Federal fluid mineral resources.

3. PROPOSED ACTION

This section describes future development strategy by BBC given current market conditions and company constraints. If fully developed, this proposal would result in the completion of 127 Federal wells (Table 1). The total number of wells drilled, and wells drilled per year, would depend largely on factors out of BBC's control, such as availability of drill rigs, geologic success, engineering technology, economic factors (e.g., the price of natural gas and the cost of services), availability of commodity markets, and lease stipulations.

The proposed development, in Sections 28, 33, 34, and 35, would consist of eight well pads encompassing approximately 40 acres of short-term disturbance. The project area includes Federal and Fee surface ownership underlain by Federal mineral ownership (Figure 1). Associated with these developments would be the construction of up to 4.9 miles of new access roads and 4.2 miles of pipeline. Approximately 3.4 miles of pipeline would be collocated with the proposed access roads in order to minimize the total number of disturbance corridors.

Major elements of the proposal are described below under the headings **Development** (Construction, Drilling and Completion), **Production** (Operation and Maintenance), **Final Abandonment and Reclamation**, and **Road Maintenance**.

3.1 Development (Construction, Drilling and Completion)

During the course of development, numerous construction activities would be needed. All of these activities could occur simultaneously. The following is a description of construction methods proposed for well pads, access roads, and gas gathering and produced water pipelines.

3.1.1 Construction

Proposed Well Pads

BBC would construct eight new well pads to drill up to 127 natural gas wells. Prior to individual well pad construction, BBC would obtain approval of an Application for Permit to Drill (APD) by the BLM and the Colorado Oil and Gas Conservation Commission (COGCC). Each APD would contain site-specific Conditions of Approval (COAs) that apply to construction and well operations.

The locations of the well pads reflect the results of on-site inspections conducted by the BLM, BBC, BBC subcontractors, and private landowners. The primary purpose of the on-site inspections was to assess potential resource impacts associated with the various construction, drilling, and production activities. Each on-site inspection included assessment of the proposed pad and pit layout, cuts and fills, topsoil stockpiling, erosion control, access, pipeline routes, and reclamation potential of each activity. This was a detailed site-specific inspection process completed with numerous field visits and in some cases, multiple revisions to individual proposed well locations, pipelines, and access routes were made to minimize potential impacts identified by BLM or to accommodate landowner's requests. An agreement currently exists between BBC and the Fee landowner for pad, road and pipeline construction.

The proposed well pads would be constructed from native soil and rock materials using appropriate heavy equipment. The pads would be constructed by clearing all vegetation, stripping and stockpiling topsoil along the edge of the well pad for use during reclamation, and leveling the pad area using cut-and-fill techniques. If needed, juniper trees would be removed and placed at the toe of the fill slopes to help contain the fill and act as a sediment control and filtration system for stormwater management. Pinyon trees would be chipped or logged and removed from the site. Any other woody vegetation would be mulched or used in reclamation, and/or placed at the toe of the fill slopes. Cut slopes, associated with pad construction, would be left rough to provide a seed catchment surface, and may require "step cutting" if heights exceed 15 feet. Cut slopes for pad construction should not be steeper than 1.5 to 1.0 (horizontal to vertical), except when approved by the BLM. The tops of the cut banks and pad corners may be rounded to improve their appearance and reduce volume of cut and fill material.

A cuttings containment area would be constructed during the course of pad construction to store cuttings generated from drilling. Depending upon space requirements, cuttings may also be stacked on location prior to site reclamation. The cuttings would be washed, dewatered and amended, as necessary, so they could be used as fill material during reclamation. The cuttings containment area would be fenced in accordance with BLM and COGCC guidelines. The well pad itself would not be fenced.

Initially, the size of the newly constructed pads would range in size from about 3.9 to 5.5 acres (Table 2). After all wells are drilled and completed and production facilities are installed, interim reclamation would begin. Cuts and fills would be recontoured and revegetated to blend in with adjacent natural slopes as much as possible, and seeded to reestablish vegetation cover. These interim reclamation techniques would result in a significant reduction of remaining surface disturbance that would remain over the long-term life of the project (i.e., 20 to 30 years). The size of the pads during drilling and completion activities (short-term disturbance) and after interim reclamation (long-term disturbance) is described in Table 2.

The sides of the well pads would be bermed to prevent stormwater from flowing off the pad and into nearby drainages. Stormwater would be directed to an opening in the berm that leads off the pad to a sediment trap or other control as appropriate. BBC's stormwater management efforts may include additional engineering measures, such as installation of culverts to divert water flow away from surface locations as needed, and other runoff controls and barriers.

If all wells on the pad are not drilled concurrently, BBC would request approval to leave the pad unreclaimed, fencing the cuttings containment area until the following drilling season. All well pads would be reclaimed in accordance with BLM and COGCC requirements. BBC would implement and complete temporary (pre-interim) reclamation or standard interim reclamation practices as identified in the surface COA, or submit proposed best management practices approved by the BLM and implemented on the "open" pad. These measures are intended to control stormwater drainage and weeds and to provide for wildlife protection measures, dust abatement, and visual resource management.

On average, five personnel, mostly equipment operators, would work on the construction of an individual well pad. Construction of an individual well pad could take from 1 to 3 weeks depending on the features of each particular site.

Proposed Access Roads

Implementation of the Proposed Action would require construction and improvements of access roads on the BLM and private surface.

The primary access route to this area would be from Interstate 70 exiting west of Silt, Colorado, at Mamm Creek Road (Exit 94) for heavy-truck traffic and from Interstate 70 exiting at Silt (Exit 97) for light trucks and passenger vehicles. Directions to the Project Area are as follows:

Heavy Vehicles: From Interstate 70 at Exit 94, proceed south along Mamm Creek Road (Garfield County Road [CR] 315) for approximately 4.9 miles to the Jenkins Cutoff (CR 336). Make a left turn at the Jenkins Cutoff and proceed approximately 2.5 miles until the intersection with Dry Hollow Road (CR 331), then turn right and head south for approximately 0.5 mile. At the junction of Dry Hollow Road and Maxfield Road (CR 324), make a left onto Maxfield Road and head east. After travelling approximately 2.4 miles on Maxfield Road, make a left turn and head north on Divide Creek Road (CR 311). Travel north on Divide Creek Road for approximately 4.6 miles until it intersects with the existing private access road. Take the existing access road east for approximately 4.1 miles to the intersection with the existing MDP 26 pad access road on the left. Proceed left in an easterly direction for approximately 0.2 mile until the new Jackson Gulch road on the left. Proceed on the new Jackson Gulch road to access all Jackson Gulch pads (Figure 2).

Light Vehicles: From the Interstate 70 Exit 97, proceed south to River Frontage Road, then proceed left in an easterly direction on River Frontage Road for approximately 0.4 mile to the intersection with Divide Creek Road (CR 311) on the right. Proceed right in a southeast direction on Divide Creek Road for approximately 4.1 miles to the existing private access road on the left. The remaining access route would be the same as that described above for heavy vehicles (Figure 2).

The majority of proposed access roads would be paralleled by pipelines (i.e., collocated roads and pipelines). Where new pipelines are proposed adjacent to access roads, a 100-foot right-of-way (ROW) would initially be needed (50 feet for the road, 50 feet for the pipelines). To the extent possible, BBC would attempt to limit the overall disturbance from road and pipeline construction. Various segments of these access roads are outside of the boundary of the leases to be developed, and BBC would apply for a ROW authorization to gain access across those BLM administered lands outside of the lease boundaries.

Roads would be designed and maintained to an appropriate standard no higher than necessary to accommodate their intended functions, as described in the *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development, Fourth Edition* (BLM and USFS, Revised 2007) and BLM Handbook 9113- *Roads Manual.*

Aggregate for road surface would be obtained from Federal or Fee land in conformance with applicable regulations. Aggregate would be of sufficient size, type, and amount to allow all weather access and alleviate dust. Following interim reclamation, the running surface width would be between 22 and 24 feet, but would typically be 22 feet wide, with safety, site distance, grade, topography, anticipated traffic flow, and visual resource management concerns being factors in actual width determination.

Road construction/reconstruction would include clearing and grubbing of brush and trees, windrowing of topsoil, construction of reinforced rolling dips and grade dips where feasible, installation of culverts in ditched sections and side drainages to provide ditch relief and sediment control, construction of retaining structures on steep slopes (as approved by the BLM), placement of slash and topsoil on cut and fill slopes, placement of erosion controls on cut and fill slopes as approved by the BLM, seeding of all disturbed areas outside of the running surface, and installation of cattle guards and road closure gates as necessary.

Revegetation of road ditches and cut and fill slopes would help stabilize exposed soil and reduce sediment loss, reduce the growth of noxious weeds, reduce maintenance costs, maintain scenic quality and forage, and protect habitat. To ensure successful growth of plants and forbs, topsoil would be stripped and stockpiled during road construction and re-spread to the greatest degree practical on cut slopes, fill slopes, and borrow ditches prior to seeding.

The average grade would be 10 percent or less, wherever possible. The 10 percent grade would only be exceeded where the physical terrain or unusual circumstances require it. Minimum horizontal curve radii would be 100 feet. Where terrain would not allow a 100-foot curve radius, the curve would be widened. Road construction would result in approximately 30 acres of short-term ground disturbance. Following interim reclamation, the long-term disturbance would be approximately 18 acres. Road maintenance would be performed as needed to ensure safe travel and to control dust.

Workforce would include an average of five personnel per day to operate the equipment.

Proposed Gas Gathering and Water Pipelines

A gas gathering and water pipeline network is necessary for both gathering and delivering gas offsite to existing main gathering lines and for transporting water to facilities within and outside the project area. Figure 2 shows proposed gas gathering and water pipeline associated with the development of the eight proposed well pads and their locations relative to the proposed access roads.

Various segments of the proposed pipelines are outside of the boundaries of the leases to be developed. BBC intends to apply for a ROW authorization for these segments outside of the lease boundaries. The ROW area applied for the proposed pipelines would be 50 feet wide (short-term disturbance) reclaimed to a 30-foot wide permanent ROW.

Gas gathering pipelines would be constructed of steel with a maximum allowable working pressure of 740 pounds per square inch and a diameter up to 12 inches. The gathering lines that parallel new roads would be installed in the cut side of the road in the shoulder prior to final grading and aggregate application. Water lines 6 to 8 inches in diameter would be installed in a common trench with the gas gathering lines concurrently to minimize surface disturbance, and would be constructed of steel or poly-pipe. These pipelines would be operated and maintained by BBC through the life of the project.

Mitigation Common to All Construction Operations

Trees removed from pad locations would be placed at the toe of the fill slopes to act as a sediment control and filtration system for stormwater management, and /or placed back on the reclaimed surfaces. Trees

removed along access roads would be selectively removed and placed at the toe of the fill slopes to "catch" the fill, as well as act as a filtration system for stormwater management. Cut pinyon pine trees would be chipped, buried, or logged and removed from the site to prevent the spread of the *Ips* beetle.

If trees cannot be placed at the toe of fill slopes, the trees would be cut to a maximum stump height of 6 inches and placed back onto the cut and/or fill slopes with the slash height not to exceed 24 inches. Root balls would be buried or placed at the toe of the fill slopes. Trees would not be dozed off the access road, except on private surface where trees may be dozed with consent from the landowner. Trees and other vegetation may be dozed on pipeline routes and then pulled back onto the ROW as part of final reclamation. Other vegetation, such as sagebrush and other shrubs, may be scattered off site or placed on well pads and road fills to help visually screen the slopes. On pads where boulder fields exist, reclamation would include the replacement of boulders in order to reconstruct a more natural appearance.

3.1.2 Drilling and Completion

Up to 127 wells would be drilled as part of the Proposed Action. Table 1 lists the surface location of the wells, as well as the footages from section lines for the bottom-hole locations. BBC's drilling operations would be conducted in compliance with all Federal Onshore Oil and Gas Orders, all applicable rules and regulations, and Notices to Lessees. Drilling rigs in the project area would be targeting natural gas producing horizons in the Mesaverde and Iles formations at depths of 4,500 to 8,500 feet.

Drilling activities on individual wells would typically occur 24 hours per day with approximately 12 workers for a period of 5 to 7 days. Completion activities would also typically occur 24 hours per day with approximately 15 workers for a period of 2 to 3 days. Pads with multiple wells would be occupied for an extended period of time, depending on the number of wells drilled. Completion of wells is generally done on a zone basis, with the same zone for all wells on a pad being stimulated at the same time and then progressing upward through each zone in each group of wells, so the total completion time for any given well may extend beyond the 2 to 3 days that would be required for completing a single well. Production results for wells drilled during the first year would be used to plan and design the drilling program for subsequent years.

BBC intends initially to drill and complete 11 to 20 wells on a pad, possibly causing drilling operations to be conducted in more than one phase. Development pace and schedule would be highly sensitive to the price of gas and cost of services. The BLM would be notified of scheduling changes in a timely manner. If all wells on the pad are not drilled concurrently, BBC may request approval for the pad to remain unreclaimed until the following drilling season. Interim or temporary (pre-interim) reclamation would be conducted in accordance with BLM and COGCC requirements as described in a subsequent section of this Proposed Action. Because of geologic and market uncertainties, BBC may drill fewer wells than those described in the Proposed Action.

Current plans call for use of mud rotary platform rigs with capability matched to the depth requirements of the proposed well. Descriptions of drilling procedures for each proposed well would be included in the well-specific APDs to be submitted to BLM by BBC.

BBC would use a small truck-mounted drilling rig to drill the conductor pipe and rat holes. Once the conductor pipe is set and cemented in place, another drilling rig would preset surface casing. Lastly, the conventional drilling rig would be moved in and rigged up to spud (begin drilling) the production holes to total depth. Prior to drilling below the surface casing, well control equipment (Blowout Preventer and Choke Manifold) would be installed on the surface casing and both the well control equipment and surface casing would be tested to ensure adequate well control. The well control equipment would meet the minimum standards of Onshore Oil and Gas Order No. 2 (Drilling Operations), and the BLM would

be notified in advance of all pressure tests in order to be present and witness the tests, if so desired. Charts of the test are kept on location and are available to the BLM for inspection at any time.

A downhole motor is used to directionally drill the well and to increase penetration rate. The motor is powered by drilling fluids that are used to drive the motor, cool the bit, and carry drill cuttings to the surface. Conventional water based drilling fluids would be utilized in the drilling of the wells. In order to maintain borehole stability, minimize possible damage to the formation, provide adequate carrying viscosity (thickness) to carry the drill cuttings out of the wellbore, and reduce downhole fluid losses, various non-toxic chemicals and certain materials may need to be added to the mud system.

For the directional wells, an S-shaped directional design would be used to reach the targeted downhole well locations. In general, a target radius of 50 feet would be used. Specific directional plans for each well would be included with the APDs. Downhole operations would be done with directional tools to facilitate proper direction and path of the well. The actual bottom-hole locations would be horizontally separated from the surface pad positions up to 2,500 feet.

Drill cuttings from the wellbore (mainly shale, sand, and miscellaneous rock minerals) would be directed to a cuttings containment area, and eventually stacked, spread or buried on location or incorporated into the reclamation of the pad, in accordance with the requirements of COGCC rules.

After drilling the hole to its total depth, logging tools would be run into the well to evaluate the potential hydrocarbon resource. If evaluation indicates adequate hydrocarbon resources are present and recoverable, steel production casing would be run and cemented in place in accordance with the well design, as approved by the BLM. The proposed casing and cementing program would be designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals.

Drilling rig engines would be muffled in accordance with Federal and State laws to minimize noise. Generator-driven lights would be installed on the rig substructure and mast to light each well pad for night drilling and safety of workers. To the extent possible, all lights would be oriented inward and downward to minimize impact to offsite locations.

Once a well has been drilled and cased, completion operations would begin. Well completion consists of running a Cement Bond log to evaluate cement integrity and correlate the cased hole logs to the open hole logs, perforating the casing across the hydrocarbon producing zones, and stimulating the formation to enhance the production of oil and gas. The typical method used for stimulation consists of hydraulic fracture (frac) treatment of the reservoir, in which sand and non-toxic fluids are pumped into the producing formation with sufficient hydraulic pressure to fracture the rock formation. The sand serves as a proppant to keep the created fractures open, thereby allowing reservoir fluids to move more efficiently into the wellbore.

The next phase would be to flow and test the wells to determine rates of production. A completion pit may be constructed on each pad, or centrally located, to store water for frac operations and as a repository for flowback fluids. The need for and construction details of completion pits would be addressed in the APDs submitted to BLM and COGCC. Flow tests would continue at each well until such time as ultimate well productivity and production characteristics can be determined. Testing would require the installation of a wellhead, test meter, separator, and tank battery at each well.

Well effluent during operations prior to encountering salable hydrocarbon gas or significant volumes of condensate would be directed to tanks such that volumes shall not be allowed to accumulate in excess of 20 barrels, and would be removed within 24 hours. The gaseous phase of non-flammable effluent would be directed to a flare pit or vented from tanks for safety purposes until flammable gas is encountered.

Well effluent containing more than 10 barrels per day of condensate or within 2 hours after first encountering salable hydrocarbon gas would be directed to a combination of sand traps, separators, surge vessels, and tanks to ensure safe separation of sand, hydrocarbon liquids, water, and gas, to ensure salable products are efficiently recovered for sale or conserved, and ensure non-salable products are disposed of in a safe and environmentally responsible manner.

If it is safe and technically feasible, closed-top tanks would utilize backpressure systems that exert a minimum of 4 ounces of backpressure and a maximum that does not exceed the pressure rating of the tank to facilitate gathering and combustion of tank vapors. Vent/backpressure values, the combustor, lines to the combustor, and knock-outs would be sized and maintained so as to safely accommodate any surges the system may encounter.

All salable gas would be directed to sales line as soon as practicable or shut in and conserved. Temporary flaring or venting would be conducted as a safety measure during upset conditions and in accordance with all other applicable laws, rules, and regulations.

A flare stack would be constructed a minimum of 110 feet from each wellhead and would be used as necessary during completion activities. BBC would implement green completion practices in order to minimize or eliminate flaring during completion work. BBC would employ sand traps, surge vessels, separators, and tanks as soon as practicable during flowback and cleanout operations to safely maximize resource recovery and minimize releases to the environment. Natural gas would be directed into the flare stack with a constant source of ignition until either shut-in or flowlines and pipelines are constructed and natural gas is directed into the gas gathering system. Flare lines would be directed so as to avoid environmental damage and as required by regulations. A deflector and/or directional orifice would be used to safeguard both personnel and the adjacent environment.

Approximately 2,500 to 3,000 barrels of fresh water would be used during the drilling of each well, with approximately 600 barrels recovered and reused for subsequent drilling or cementing operations. Well completion would require approximately 8,000 barrels of water/stage with an average of 9.5 stages per well. During flowback and production, approximately 60 percent of the water used for well completion is recovered and would be reused for subsequent completions. BBC has developed a comprehensive water management system that allows the efficient recycling and reuse of water and transportation of water to each well pad via pipelines. This system significantly reduces truck traffic associated with hauling water and results in all recycled water being used for well completions.

3.2 Production

3.2.1 Surface Facilities

Surface facilities at each location would consist of wellheads, separators, gas metering units, fugitive emission combustors, radio antennas, solar panel brackets, chemical storage containers less than 500 gallons in capacity, and above-ground condensate and produced water tanks with approximately 300- to 500-barrel capacities each. Telemetry equipment may be used to remotely monitor well conditions. It is possible that artificial lift systems would be installed if the need arises. Multi-well locations would share production equipment, whenever feasible, to minimize surface occupancy and disturbance. All facilities would be located on the well pad and spaced appropriately in accordance with BLM recommendations. All production equipment located on, or associated with the development of Federal leases would be painted to match the surrounding terrain and located to reasonably minimize visual impact. BLM would select the color for these facilities at each site. The production equipment would be fenced to prevent contact with wildlife/livestock. Telemetry equipment would be used where feasible to remotely monitor well conditions.

Tank batteries would be placed within secondary containment to prevent off-site migration of accidentally spilled condensate or produced water. Secondary containment would consist of lined, corrugated steel containment rings, and would be constructed to prevent lateral movement of any fluids outside of the tanks. Secondary containment would be sized to contain a minimum of 110 percent of the storage capacity of the single largest tank within the barrier. All loading lines would be placed inside the containment barrier or would have secondary containment vessels.

All site security guidelines would be followed as identified in 43 CFR 3162.7-5 and Onshore Oil and Gas Order No. 3. All permanent structures would be painted a flat, non-reflective color as determined by the BLM. Facilities would be painted within 6 months of being installed. As required by the Occupational Safety and Health Administration, some equipment would not be painted for safety reasons (i.e., some equipment would be safety colored so that it does not blend with the surroundings).

3.2.2 Gas/Water Gathering

New gas and water gathering pipelines would be added to the existing pipeline network. The new pipelines would generally be buried adjacent to new access roads, but may be constructed cross-country in limited situations. The pipeline alignment would first be cleared of vegetation remaining after road construction. If excessive rock is encountered during construction, blasting may be necessary for pipeline installation. Construction of the pipelines would follow construction of the new roads in a planned sequence. To the extent possible, all vehicles and trenching equipment would use the road as part of the construction ROW. The pipeline trench would be excavated mechanically in the cut side of the road corridor with an excavator (trackhoe), and would be approximately 3 to 7 feet wide and at least 4 feet deep. Gas pipeline segments would be welded together and lowered in the trench. The water line would then be placed into the ditch and separated from the gas line by sandbags or other means.

After construction, pipelines would be leak tested with water, nitrogen gas, or compressed air to locate any leaks. Water or nitrogen used for testing would be obtained off-site. After testing, the water would be disposed of or discharged with the appropriate BLM and State of Colorado approvals and/or permits. If nitrogen or air is used, it would be released to the atmosphere. Generally, a mile of pipeline would be constructed in approximately 6 to 8 weeks and take approximately 15 workers.

3.2.3 Fluid Management

Completion Phase

All frac flowback water would be contained in temporary tanks or lined completion pits during completion operations and would be recycled for reuse, or transported off site to approved disposal facilities.

Production Phase

Multiple 300- to 500-barrel steel tanks would be installed on the well pad or off-site facilities to capture produced water, and would be onsite for the life of the wells. Produced water may be recycled for use in drilling and completion operations or piped or trucked off site to approved disposal facilities. Typically, a well pad with 16 wells would require 8 to 10 tanks for storage of fluids. Two to three of these tanks would be used to store produced water, with the remainder storing condensate. Although BBC would install water pipelines to each well pad to be used to transport water, onsite tanks are still required for storage for those instances when pipeline/storage constraints, pipeline maintenance or other conditions limit the ability to transport water via these pipelines. Condensate would be collected at the well site in steel storage tank(s) and transported to market by tanker trucks.

3.2.4 Interim Reclamation

After well completion activities are finalized, BBC would reduce the size of the well pad to the minimum surface area needed for production facilities and future workovers, while reshaping and stabilizing cut and fill slopes. Interim reclamation would be accomplished by grading, leveling, and seeding the unused area of the site, reducing the disturbed area at each pad to approximately 2 acres after well development.

The following is a summary of interim reclamation activities BBC would implement after all wells have been completed on a location:

- The well location and surrounding areas(s) would be cleared of all debris, materials, and trash not required for production. Waste materials would be disposed of at an appropriate disposal facility.
- All cellars, rat holes and other bore holes at drilling locations unnecessary for further lease operations would be back-filled to conform to surrounding terrain after the drilling rig is released.
- All drill cuttings would be buried in an onsite cuttings containment area and/or incorporated into reclamation activities in accordance with COGCC rules.
- Areas not necessary for production and future workovers would be reshaped to resemble the original landscape contour. Stockpiled topsoil would be redistributed and disked on the area to be reclaimed and re-seeded according to BLM recommendations.

Interim reclamation of the portion of well pads and access roads not needed for production facilities or operations would be reclaimed within 6 months from the date of well completion, weather permitting. In the event subsequent drilling operations commence on a location within 12 months, temporary reclamation would be performed to stabilize the site and minimize dust and erosion. Dry/non-producing well locations would be plugged, abandoned and reclaimed within 6 months of well completion.

Some locations would require the use of special reclamation practices. These practices could include hydro-mulching, straw mat application on steeper slopes, fertilizing, seed-bed preparation, contour furrowing, watering, terracing, water barring, and the replacement of topsoil.

3.2.5 Workovers/Recompletion

Workover or recompletion of a well may occasionally be required to maintain efficient production. This can include repairs to well bore equipment (casing, tubing, rods, or pump), wellheads, or production facilities. These repairs would usually be completed during daylight hours. Workover frequency cannot be accurately projected because it varies from well to well. Space for equipment would be limited to "in-use" (i.e., disturbed) areas, although it is possible that interim reclamation could be delayed by workover operations. In the case of a well recompletion, a water completion pit may have to be constructed.

3.3 Final Abandonment and Reclamation

3.3.1 Well and Pipeline Plugging and Abandonment

Upon abandonment, each well would be plugged with cement and its related surface equipment would be removed. Subsurface pipelines would be plugged at specific intervals and site contouring would be accomplished using appropriate heavy equipment. All disturbed surface soil would be reseeded with native vegetation. The seed mix used would conform to the typical vegetation surrounding the specific well site and would be approved by the BLM or private landowner.

A Sundry Notice would be submitted by BBC to the BLM describing the technical and environmental aspects of final plugging and abandonment. This notice would describe plugging and final reclamation procedures and mitigation measures performed by the operator, and would adhere to BLM and COGCC standards. A configuration diagram, summary of plugging procedures, and job summary with techniques used to plug the well bore (e.g., cementation) would be included in the Sundry Notice.

3.3.2 Final Reclamation

All surface disturbances would be recontoured and revegetated according to an approved reclamation plan. Final well site reclamation would be performed and monitored in accordance with the 1998 Glenwood Springs Resource Area reclamation policy. Unreclaimed areas or reclaimed areas that do not meet the objective of 3 to 4 years of sustained reclamation (known as "operator complete") would undergo re-treatment measures described in the Surface Use Plan of Operations, with each APD. BBC would also meet BLM bonding requirements for abandonment and reclamation.

BBC would restore well pads and access roads to their approximate original contours. Fill material would be pushed into cuts and up over the back slope, and no depressions would be left that would trap water or form ponds. After backfilling, leveling and recontouring, topsoil would be spread over the reclaimed areas, and surfaces would be seeded with a seed mixture recommended by the BLM or private landowner. The seedbed would be prepared by disking and roller packing, following natural contours. Seed would be drilled at a depth no greater than 0.5 inch. In areas that cannot be drilled, seed would be broadcast at double the seeding rate and harrowed into the soil. Certified weed-free seed would be used per BLM policy. If seeding is unsuccessful, BBC would be required to make additional seedings.

3.4 Road Maintenance

The access roads would be inspected by the BLM and maintained by BBC on an as-needed or quarterly basis (at a minimum) to include such items as:

- road surface grading and graveling
- relief ditch, culvert and cattle guard cleaning
- erosion control measures for cut and fill slopes and other disturbed areas
- road closures when there is excessive soil moisture to prevent excessive rutting caused by traffic
- road and slope stabilization measures as required until final abandonment and reclamation
- weed control
- dust abatement techniques, with frequency determined by the BLM, private landowners, and BBC

3.5 Habitat Mitigation

A wildlife habitat mitigation plan would be developed as part of the any annual winter stipulation exception requests and is meant to serve as mitigation for project related potential impacts to wildlife habitat. Parts of the MDP area include raptor nests and are considered elk and deer winter range by Colorado Parks and Wildlife.

The habitat mitigation plan would be developed to fully mitigate any potential impacts by improving and expanding winter habitat conditions and water availability within a portion of the MDP area. The minimum goal of the habitat mitigation plan is to provide for no 'net impacts' to wildlife.

4. REFERENCES

Bureau of Land Management (BLM). 1984. Glenwood Springs Resource Area Resource Management Plan. Grand Junction District Office, Colorado. U.S. Department of the Interior.

_____. 1991. Glenwood Springs Resource Area Record of Decision and Resource Management Plan (ROD). Grand Junction District Office, Colorado. U.S. Department of the Interior.

_____. 1999. Glenwood Springs Resource Area Oil &Gas Leasing &Development Record of Decision and Resource Management Plan, March. U.S. Department of the Interior.

U. S. Department of the Interior (USDI) and U.S. Department of Agriculture (USDA). 2007. Surface Operating standards and guidelines for oil and gas exploration and development. The Gold Book. Fourth Edition.

Figure 1. Project Area and Lease Map

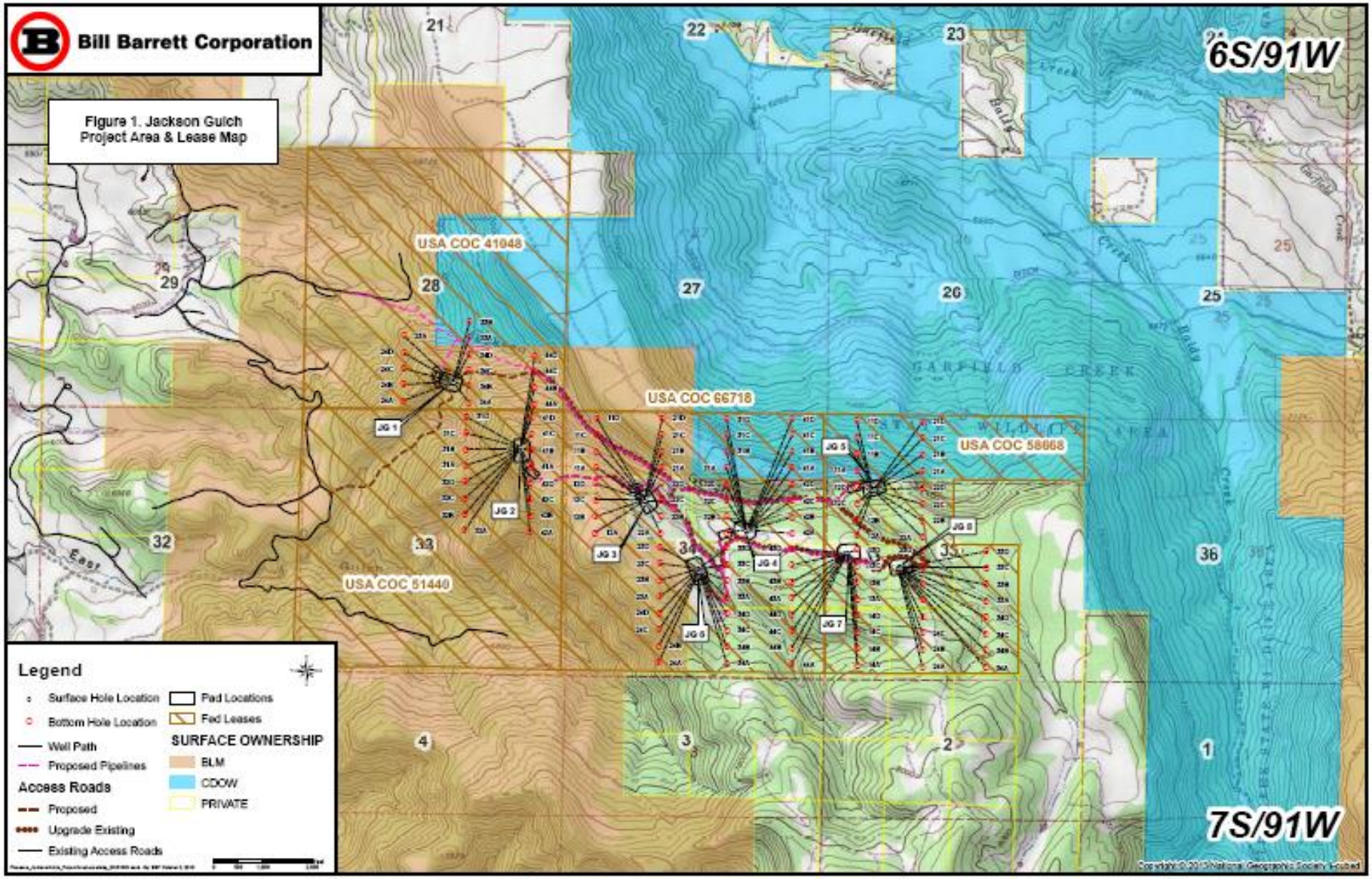

Figure 2. Road and Pipeline Exhibit

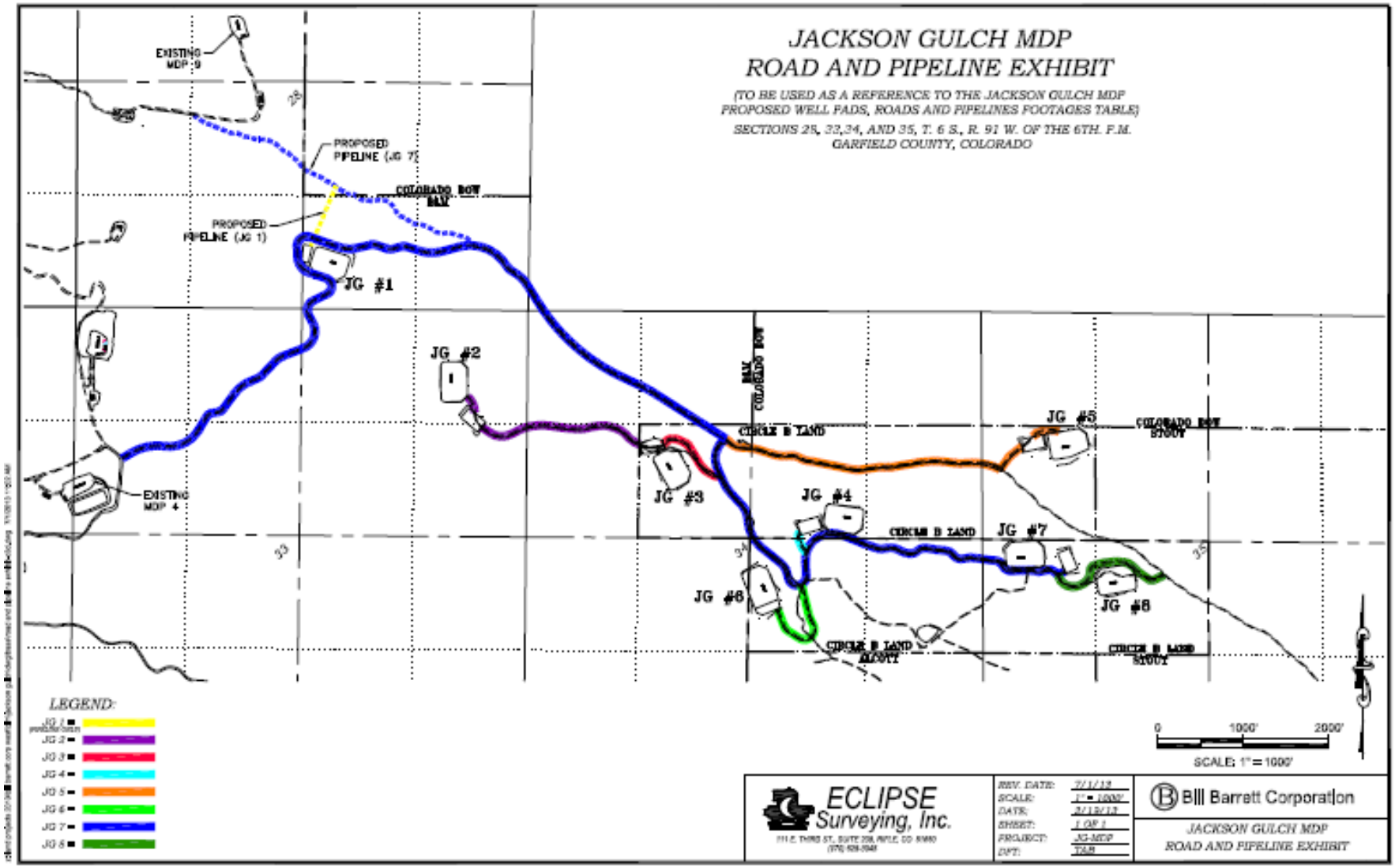

Table 1. List of Federal/Fee Wells, Surface and Bottomhole locations

Well Name	Lease	Sec	T	R	Bottom Hole Locations	Surface Owner	Mineral Owner
JG 1							
GGU Federal 24D-28-691	COC41048	28	6S	91W	1141' FSL; 1990'FWL	Federal	Federal
GGU Federal 23A-28-691	COC41048	28	6S	91W	1481' FSL; 1990'FWL	Federal	Federal
GGU Federal 33B-28-691	COC41048	28	6S	91W	1813' FSL; 1990' FEL	Federal	Federal
GGU Federal 33A-28-691	COC41048	28	6S	91W	1483' FSL; 1990' FEL	Federal	Federal
GGU Federal 34D-28-691	COC41048	28	6S	91W	1143' FSL; 1990' FEL	Federal	Federal
GGU Federal 34C-28-691	COC41048	28	6S	91W	825' FSL; 1990' FEL	Federal	Federal
GGU Federal 34B-28-691	COC41048	28	6S	91W	495' FSL; 1990' FEL	Federal	Federal
GGU Federal 34A-28-691	COC41048	28	6S	91W	166' FSL; 1990' FEL	Federal	Federal
GGU Federal 24A-28-691	COC41048	28	6S	91W	168' FSL; 1990' FWL	Federal	Federal
GGU Federal 24B-28-691	COC41048	28	6S	91W	495' FSL; 1990' FWL	Federal	Federal
GGU Federal 24C-28-691	COC41048	28	6S	91W	823' FSL; 1990' FWL	Federal	Federal
JG 2							
Federal 42B-33-691	COC51440	33	6S	91W	2162' FNL; 668' FEL	Federal	Federal
Federal 42C-33-691	COC51440	33	6S	91W	1829' FNL; 668' FEL	Federal	Federal
Federal 42D-33-691	COC51440	33	6S	91W	1497' FNL; 668' FEL	Federal	Federal
Federal 41A-33-691	COC51440	33	6S	91W	1164' FNL; 668' FEL	Federal	Federal
Federal 41B-33-691	COC51440	33	6S	91W	832' FNL; 668' FEL	Federal	Federal
Federal 41C-33-691	COC51440	33	6S	91W	499' FNL; 668' FEL	Federal	Federal
Federal 41D-33-691	COC51440	33	6S	91W	166' FNL; 668' FEL	Federal	Federal
Federal 44A-28-691	COC41048	28	6S	91W	167' FSL; 668' FEL	Federal	Federal
Federal 44B-28-691	COC41048	28	6S	91W	497' FSL; 668' FEL	Federal	Federal
Federal 44C-28-691	COC41048	28	6S	91W	827' FSL; 668' FEL	Federal	Federal
Federal 44D-28-691	COC41048	28	6S	91W	114' FSL; 668' FEL	Federal	Federal
Federal 31D-33-691	COC51440	33	6S	91W	166' FNL; 2003' FEL	Federal	Federal
Federal 31C-33-691	COC51440	33	6S	91W	498' FNL; 2003' FEL	Federal	Federal
Federal 31B-33-691	COC51440	33	6S	91W	830' FNL; 2004' FEL	Federal	Federal
Federal 31A-33-691	COC51440	33	6S	91W	1162' FNL; 2004' FEL	Federal	Federal
Federal 32D-33-691	COC51440	33	6S	91W	1494' FNL; 2004' FEL	Federal	Federal
Federal 32C-33-691	COC51440	33	6S	91W	1826' FNL; 2005' FEL	Federal	Federal
Federal 32B-33-691	COC51440	33	6S	91W	2159' FNL; 2005' FEL	Federal	Federal
Federal 32A-33-691	COC51440	33	6S	91W	2491' FNL; 2005' FEL	Federal	Federal
Federal 42A-33-691	COC51440	33	6S	91W	2495' FNL; 668' FEL	Federal	Federal
JG 3							
Federal 22B-34-691	COC66718	34	6S	91W	2152' FNL; 1990'FWL	Fee	Federal
Federal 22C-34-691	COC66718	34	6S	91W	1820' FNL; 1990'FWL	Fee	Federal
Federal 22D-34-691	COC66718	34	6S	91W	1487' FNL; 1990'FWL	Fee	Federal
Federal 21A-34-691	COC66718	34	6S	91W	1155' FNL; 1990'FWL	Fee	Federal
Federal 21B-34-691	COC66718	34	6S	91W	822' FNL; 1990' FWL	Fee	Federal
Federal 21C-34-691	COC66718	34	6S	91W	489' FNL; 1990' FWL	Fee	Federal
Federal 21D-34-691	COC66718	34	6S	91W	157' FNL; 1990' FWL	Fee	Federal
Federal 11D-34-691	COC66718	34	6S	91W	163' FNL; 660' FWL	Fee	Federal
Federal 11C-34-691	COC66718	34	6S	91W	496' FNL; 660' FWL	Fee	Federal
Federal 11B-34-691	COC66718	34	6S	91W	828' FNL; 660' FWL	Fee	Federal

Federal 11A-34-691	COC66718	34	6S	91W	1161’ FNL; 660’ FWL	Fee	Federal
Federal 12D-34-691	COC66718	34	6S	91W	1493’ FNL; 660’ FWL	Fee	Federal
Federal 12C-34-691	COC66718	34	6S	91W	1826’ FNL; 660’ FWL	Fee	Federal
Federal 12B-34-691	COC66718	34	6S	91W	2159’ FNL; 660’ FWL	Fee	Federal
Federal 12A-34-691	COC66718	34	6S	91W	2491’ FNL; 660’ FWL	Fee	Federal
Federal 22A-34-691	COC66718	34	6S	91W	2485’ FNL; 1990’FWL	Fee	Federal
JG 4							
Federal 32B-34-691	COC66718	34	6S	91W	2146’ FNL; 1990’ FEL	Fee	Federal
Federal 32A-34-691	COC66718	34	6S	91W	2472’ FNL; 1990’ FEL	Fee	Federal
Federal 31A-34-691	COC66718	34	6S	91W	1148’ FNL; 1990’ FEL	Fee	Federal
Federal 31C-34-691	COC66718	34	6S	91W	483’ FNL; 1990’ FEL	Fee	Federal
Federal 41C-34-691	COC66718	34	6S	91W	477’ FNL; 660’ FEL	Fee	Federal
Federal 41A-34-691	COC66718	34	6S	91W	1142’ FNL; 660’ FEL	Fee	Federal
Federal 42B-34-691	COC66718	34	6S	91W	2140’ FNL; 660’ FEL	Fee	Federal
Federal 42A-34-691	COC66718	34	6S	91W	2472’ FNL; 660’ FEL	Fee	Federal
Federal 42C-34-691	COC66718	34	6S	91W	1807’ FNL; 660’ FEL	Fee	Federal
Federal 42D-34-691	COC66718	34	6S	91W	1475’ FNL; 660’ FEL	Fee	Federal
Federal 41B-34-691	COC66718	34	6S	91W	810’ FNL; 660’ FEL	Fee	Federal
Federal 41D-34-691	COC66718	34	6S	91W	144’ FNL; 660’ FEL	Fee	Federal
Federal 31D-34-691	COC66718	34	6S	91W	151’ FNL; 1990’ FEL	Fee	Federal
Federal 31B-34-691	COC66718	34	6S	91W	816’ FNL; 1990’ FEL	Fee	Federal
Federal 32D-34-691	COC66718	34	6S	91W	1481’ FNL; 1990’ FEL	Fee	Federal
Federal 32C-34-691	COC66718	34	6S	91W	1813’ FNL; 1990’ FEL	Fee	Federal
JG 5							
Federal 21A-35-691	COC58668	35	6S	91W	1171’ FNL; 1990’FWL	Fee	Federal
Federal 21B-35-691	COC58668	35	6S	91W	837’ FNL; 1990’ FWL	Fee	Federal
Federal 21C-35-691	COC58668	35	6S	91W	502’ FNL; 1990’ FWL	Fee	Federal
Federal 21D-35-691	COC58668	35	6S	91W	168’ FNL; 1990’ FWL	Fee	Federal
Federal 11D-35-691	COC58668	35	6S	91W	167’ FNL; 660’ FWL	Fee	Federal
Federal 11C-35-691	COC58668	35	6S	91W	502’ FNL; 660’ FWL	Fee	Federal
Federal 11B-35-691	COC58668	35	6S	91W	836’ FNL; 660’ FWL	Fee	Federal
Federal 11A-35-691	COC58668	35	6S	91W	1171’ FNL; 660’ FWL	Fee	Federal
Federal 12D-35-691	COC58668	35	6S	91W	1505’ FNL; 660’ FWL	Fee	Federal
Federal 12C-35-691	COC58668	35	6S	91W	1840’ FNL; 660’ FWL	Fee	Federal
Federal 12B-35-691	COC58668	35	6S	91W	2174’ FNL; 660’ FWL	Fee	Federal
Federal 12A-35-691	COC58668	35	6S	91W	2509’ FNL; 660’ FWL	Fee	Federal
Federal 22A-35-691	COC58668	35	6S	91W	2509’ FNL; 1990’FWL	Fee	Federal
Federal 22B-35-691	COC58668	35	6S	91W	2175’ FNL; 1990’FWL	Fee	Federal
Federal 22C-35-691	COC58668	35	6S	91W	1840’ FNL; 1990’FWL	Fee	Federal
Federal 22D-35-691	COC58668	35	6S	91W	1506’ FNL; 1990’FWL	Fee	Federal
JG 6							
Federal 23C-34-691	COC66718	34	6S	91W	2187’ FSL; 1990’FWL	Federal/Fee	Federal
Federal 23B-34-691	COC66718	34	6S	91W	1850’ FSL; 1990’FWL	Federal/Fee	Federal
Federal 23A-34-691	COC66718	34	6S	91W	1513’ FSL; 1990’FWL	Federal/Fee	Federal
Federal 24D-34-691	COC66718	34	6S	91W	1176’ FSL; 1990’FWL	Federal/Fee	Federal
Federal 24C-34-691	COC66718	34	6S	91W	839’ FSL; 1990’ FWL	Federal/Fee	Federal
Federal 24B-34-691	COC66718	34	6S	91W	502’ FSL; 1990’ FWL	Federal/Fee	Federal
Federal 24A-34-691	COC66718	34	6S	91W	165’ FSL; 1990’ FWL	Federal/Fee	Federal

Federal 34A-34-691	COC66718	34	6S	91W	165’ FSL; 1990’ FEL	Federal/Fee	Federal
Federal 34B-34-691	COC66718	34	6S	91W	502’ FSL; 1990’ FEL	Federal/Fee	Federal
Federal 34C-34-691	COC66718	34	6S	91W	839’ FSL; 1990’ FEL	Federal/Fee	Federal
Federal 34D-34-691	COC66718	34	6S	91W	1176’ FSL; 1990’ FEL	Federal/Fee	Federal
Federal 33A-34-691	COC66718	34	6S	91W	1513’ FSL; 1990’ FEL	Federal/Fee	Federal
Federal 33B-34-691	COC66718	34	6S	91W	1850’ FSL; 1990’ FEL	Federal/Fee	Federal
Federal 33C-34-691	COC66718	34	6S	91W	2187’ FSL; 1990’ FEL	Federal/Fee	Federal
Federal 33D-34-691	COC66718	34	6S	91W	2524’ FSL; 1990’ FEL	Federal/Fee	Federal
Federal 23D-34-691	COC66718	34	6S	91W	2524’ FSL; 1990’FWL	Federal/Fee	Federal
JG 7							
Federal 13C-35-691	COC58668	35	6S	91W	2187’ FSL; 665’ FWL	Fee	Federal
Federal 13A-35-691	COC58668	35	6S	91W	1513’ FSL; 665’ FWL	Fee	Federal
Federal 13D-35-691	COC58668	35	6S	91W	2524’ FSL; 665’ FWL	Fee	Federal
Federal 14B-35-691	COC58668	35	6S	91W	502’ FSL; 665’ FWL	Fee	Federal
Federal 44B-34-691	COC66718	34	6S	91W	502’ FSL; 665’ FEL	Fee	Federal
Federal 43A-34-691	COC66718	34	6S	91W	1513’ FSL; 665’ FEL	Fee	Federal
Federal 43C-34-691	COC66718	34	6S	91W	2187’ FSL; 665’ FEL	Fee	Federal
Federal 43D-34-691	COC66718	34	6S	91W	2524’ FSL; 665’ FEL	Fee	Federal
Federal 43B-34-691	COC66718	34	6S	91W	1850’ FSL; 665’ FEL	Fee	Federal
Federal 44D-34-691	COC66718	34	6S	91W	1176’ FSL; 665’ FEL	Fee	Federal
Federal 44C-34-691	COC66718	34	6S	91W	839’ FSL; 665’ FEL	Fee	Federal
Federal 44A-34-691	COC66718	34	6S	91W	165’ FSL; 665’ FEL	Fee	Federal
Federal 14A-35-691	COC58668	35	6S	91W	165’ FSL; 665’ FWL	Fee	Federal
Federal 14C-35-691	COC58668	35	6S	91W	839’ FSL; 665’ FWL	Fee	Federal
Federal 14D-35-691	COC58668	35	6S	91W	1176’ FSL; 665’ FWL	Fee	Federal
Federal 13B-35-691	COC58668	35	6S	91W	1850’ FSL; 665’ FWL	Fee	Federal
JG 8							
Federal 33D-35-691	COC58668	35	6S	91W	2524’ FSL; 1990’ FEL	Fee	Federal
Federal 23C-35-691	COC58668	35	6S	91W	2187’ FSL; 1990’FWL	Fee	Federal
Federal 33C-35-691	COC58668	35	6S	91W	2187’ FSL; 1990’ FEL	Fee	Federal
Federal 34D-35-691	COC58668	35	6S	91W	1176’ FSL; 1990’ FEL	Fee	Federal
Federal 34B-35-691	COC58668	35	6S	91W	502’ FSL; 1990’ FEL	Fee	Federal
Federal 23A-35-691	COC58668	35	6S	91W	1513’ FSL; 1990’FWL	Fee	Federal
Federal 24C-35-691	COC58668	35	6S	91W	839’ FSL; 1990’ FWL	Fee	Federal
Federal 23D-35-691	COC58668	35	6S	91W	2524’ FSL; 1990’FWL	Fee	Federal
Federal 24A-35-691	COC58668	35	6S	91W	165’ FSL; 1990’ FWL	Fee	Federal
Federal 24B-35-691	COC58668	35	6S	91W	502’ FSL; 1990’ FWL	Fee	Federal
Federal 24D-35-691	COC58668	35	6S	91W	1176’ FSL; 1990’FWL	Fee	Federal
Federal 34A-35-691	COC58668	35	6S	91W	165’ FSL; 1990’ FEL	Fee	Federal
Federal 34C-35-691	COC58668	35	6S	91W	839’ FSL; 1990’ FEL	Fee	Federal
Federal 23B-35-691	COC58668	35	6S	91W	1850’ FSL; 1990’FWL	Fee	Federal
Federal 33A-35-691	COC58668	35	6S	91W	1513’ FSL; 1990’ FEL	Fee	Federal
Federal 33B-35-691	COC58668	35	6S	91W	1850’ FSL; 1990’ FEL	Fee	Federal

Table 2. Jackson Gulch MDP: Proposed Well Pads, Roads, and Pipelines

Well Pad	Surface Ownership	Length (ft.) or Number	Short-Term Disturbance (acres)	Long-term Disturbance (acres)
WELL PADS				
JG 1	Federal	1	5.10	1.29
JG 2	Federal	1	4.88	1.67
JG 3	Fee	1	4.89	1.54
JG 4	Fee	1	4.97	1.57
JG 5	Fee	1	5.49	1.58
JG 6	Federal/Fee	1	4.97 (0.61/4.36)	1.27 (0/1.27
JG 7	Fee	1	5.33	1.56
JG 8	Fee	1	3.94	0.72
Total (Federal/Fee)		**8**	**39.57(10.59/28.98)**	**11.20 (2.96/8.24)**
PROPOSED ACCESS ROADS[1]				
JG 1	Federal	0	0	0
JG 2	Federal	2,177	2.50	1.50
JG 3	Fee	893	1.02	0.61
JG 4	Fee	296	0.34	0.20
JG 5	Fee	4,004	4.60	2.76
JG 6	Fee	1,239	1.42	0.85
JG 7	Fee	6,063	6.96	4.18
	Federal	9,908	11.37	6.82
JG 8	Fee	1,542	1.77	1.06
Total (Federal/Fee)		**26,122 (12,085/14,037)**	**29.98 (13.87/16.11)**	**17.99 (8.32/9.67)**
PROPOSED PIPELINE[2]				
JG 1	Federal	751	0.86	0.52
JG 2	Federal	1,977	2.27	1.36
JG 3	Fee	877	1.01	0.60
JG 4	Fee	236	0.27	0.16
JG 5	Fee	3,719	4.27	2.56
JG 6	Fee	1,272	1.46	0.88
JG 7	Fee	6,187	7.10	4.26
	Federal	7,234	8.30	4.98
JG 8	Fee	0	0	0
Total (Federal/Fee)		**22,253 (9,962/12,291)**	**25.54 (11.43/14.11)**	**15.32 (6.86/8.46)**
Total Co-located Pipeline and Access Roads		**17,732**	-	-
Grand Total (Federal/Fee)			***95.09 (35.89/59.20)***	***44.51 (18.14/26.37)***

[1] Disturbance calculations for the proposed access roads used an interim ROW of 50 feet and long-term ROW of 30 feet.

[2] Disturbance calculations for the proposed pipeline were used an interim ROW of 50 feet and a long-term ROW of 30 feet.