

U.S. Department of the Interior
Bureau of Land Management
Colorado River Valley Field Office
2300 River Frontage Road
Silt, Colorado 81652

ENVIRONMENTAL ASSESSMENT

NEPA NUMBER

DOI-BLM-CO-N040-2011-0085-EA

CASEFILE NUMBER

Surface holes are located on private land; bottomholes fall within Federal Lease COC07506.

PROJECT NAME

Proposal to Drill 16 Federal Wells from Two Existing Pads on Private Land in the Lower Beaver Creek Area Southwest of Rifle, Garfield County, Colorado.

PAD LOCATION

Existing GV15-36 Pad: Township 6 South (T6S), Range 94 West (R94W), Section 36, SENW, 6th P.M.

Existing RWF33-36 Pad: T6S, R94W, Section 36, NWSE, 6th P.M.

APPLICANT

Williams Production RMT Company LLC. Contact: Greg Davis, 1001 Seventeenth Street, Suite 1200, Denver, CO 80202.

PROPOSED ACTION

Williams Production RMT Company LLC (“Williams”) proposes to drill and develop 39 new oil and gas wells (of which 16 would be Federal wells) from two existing well pads (known as GV15-36 and RWF33-36 pads) located entirely on private property with underlying private minerals (Figure 1). The Federal wells would be directionally drilled from the private pads into the Federal lease. The GV15-36 pad, with three producing private wells, would support nine new Federal wells and one additional fee well. The RWF33-36 pad, which has been constructed and has no producing wells, would support seven Federal wells and 22 private wells for a total of 29 new wells.

No public access exists to the site; the existing access roads and pads are located on the Lucky 13 Ranch just west of Garfield County Road 317 (CR317) along the lower reaches of Beaver Creek, approximately 6.5 miles southwest of Rifle, Colorado.

The planned wells would be drilled with one scheduled drill rig commencing in early 2012. A third existing pad (RWF32-36) on Lucky 13 Ranch property is scheduled for drilling of only private wells. The rig would drill all three pads them during the one rig visit. While the rig is drilling on one pad, the other two pads would serve as cuttings storage locations and staging for remote hydraulic fracturing (“frac”) equipment to support well completions.



Figure 1. Project Map

Surface water lines would transport water from the revolving remote frac locations to support the well completion work. Existing Energy Transfer Company (ETC) buried pipelines presently serve the GV15-36 pad. Approximately 1350 feet of new buried steel pipeline would be installed from the RWF32-36 pad to the RWF33-36 pad to provide gas gathering capability for the 29 wells (seven Federal wells) on that location. Since the pipeline developments would occur on private land, BLM has no authority regarding permitting for the surface frac lines or the new ETC pipeline connection to the RWF33-36 pad.

With the exception of the new ETC pipeline, which would entail 1.7 acres of disturbance on private land, no new disturbance would be associated with the drilling of the 16 Federal wells. Both of the pads were constructed under permits issued by the Colorado Oil and Gas Conservation Commission. As shown on Figures 2 and 3, the existing disturbance is 6.6 acres for the GV15-36 pad and 8.6 acres for the RWF33-36 pad. After drilling and well completion work, the pads would be reshaped and seeded reducing each pad size to approximately 2 acres. For the purposes of impact analysis for this project, 1.7 acres of private land would be disturbed by the ETC pipeline installation, and that work would only serve the fee and Federal wells planned on the RWF33-36 pad.

A road maintenance program would be required during the drilling, completion and production phases which includes, but is not limited to blading, ditching, culvert installation and cleanout, weed control, and gravel surfacing where excessive rutting or erosion may occur. Roads would be maintained in a safe and usable condition.

The Proposed Action would include drilling and completion operations, production of natural gas and associated liquid condensate, proper handling and disposal of produced water, and interim and final reclamation. The Proposed Action would be implemented consistent with Federal oil and gas lease, Federal regulations (43 CFR 3100), and the operational measures included in the Applications for Permit to Drill (APDs). Appendix A lists the specific Surface Use Conditions of Approval that would be implemented as mitigation measures for this project. The operator would be responsible for continuous inspection and maintenance of the access roads, pads and pipelines.

NO ACTION ALTERNATIVE

The Proposed Action involves the drilling of Federal wells from private land into nearby Federal subsurface minerals encumbered with Federal oil and gas leases. Although BLM cannot deny the right to drill and develop the leasehold, individual APDs can be denied to prevent unnecessary and undue degradation.

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action. Because the operator also intends to drill private wells from both of the existing private surface well pads, the only difference in the impact assessment under the No Action Alternative is that 23 private wells would be drilled instead of the planned 39 wells. The 1350 feet of new pipeline installation between the RWF32-36 and RWF33-36 pads would also occur in this alternative to move the produced gas from the private wells into the ETC gathering system. Thus, 1.7 acres of new disturbance would occur on private land with this alternative. No other surface disturbance would occur on private or public land.

PURPOSE AND NEED FOR THE ACTION

The purpose of the action is to develop oil and gas resources on Federal lease COC07056 consistent with existing Federal lease rights. The action is needed to increase the development of oil and gas resources for commercial marketing to the public.

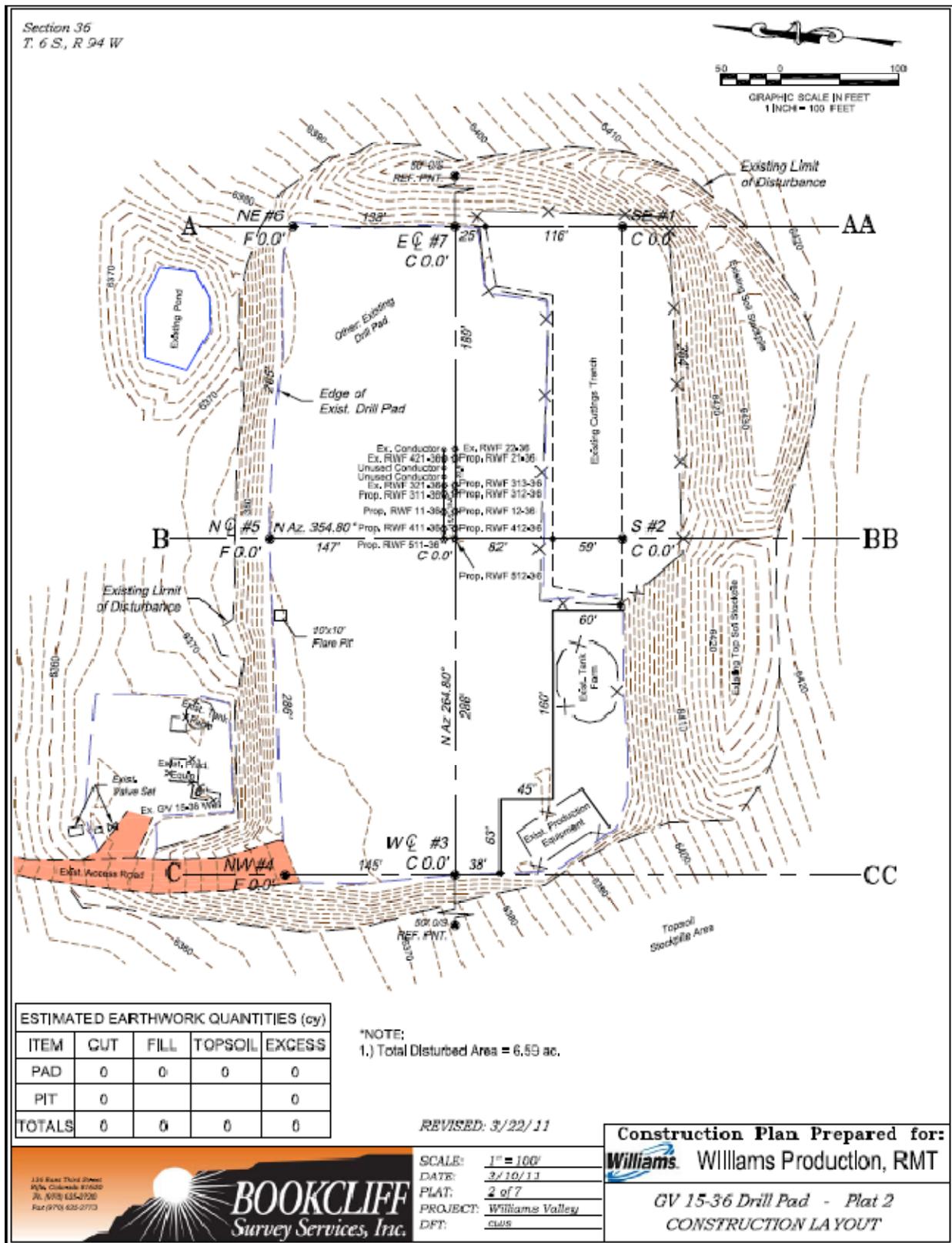


Figure 2. GV15-36 Construction Layout of the Existing Pad

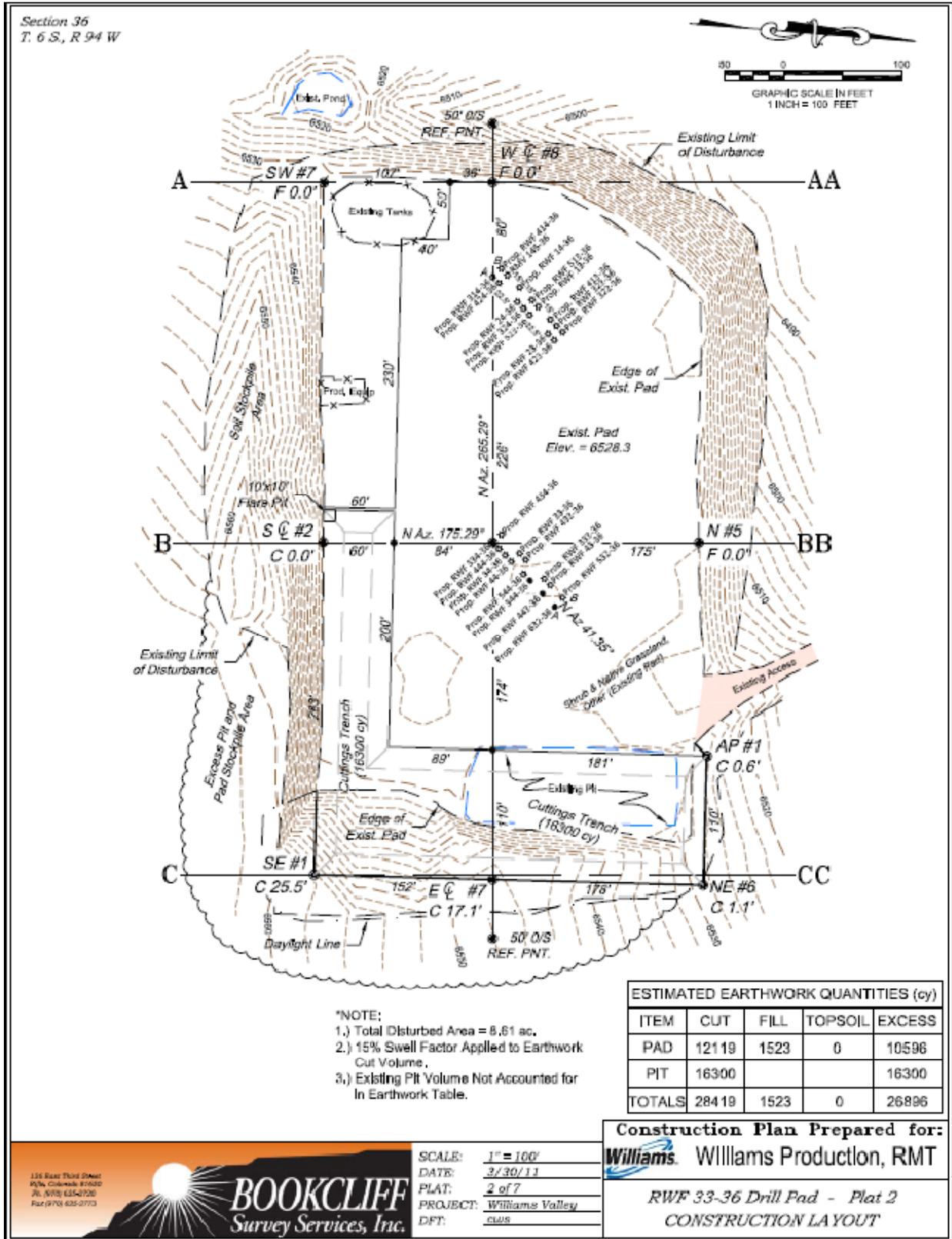


Figure 3. RWF33-36 Construction Layout of the Existing Pad

SUMMARY OF LEASE STIPULATIONS

The Federal wells would be directionally drilled from the existing GV15-36 and RWF33-36 pads located on private surface operated and owned by the Lucky 13 Ranch with underlying fee mineral estate. Because the Federal wells are accessing the nearby Federal leases from a private surface/private mineral location, the Federal lease terms are not applicable to the construction, drilling, completion, gas gathering or well production operations on the private pads. Appendix A lists site-specific conditions of approval (COAs) developed during the APD/EA review and onsite field consultation that would be attached to the Federal APDs.

PLAN CONFORMANCE REVIEW

The Proposed Action and No Action Alternative are subject to and have been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

Name of Plan: The current land use plan is the *Glenwood Springs Resource Management Plan (RMP)*, approved in 1984 and revised in 1988 (BLM 1984). Relevant amendments include the *Oil and Gas Plan Amendment to the Glenwood Springs Resource Management Plan* (BLM 1991) and the *Oil & Gas Leasing & Development Record of Decision and Resource Management Plan Amendment* (BLM 1999a).

Decision Language: The 1991 Oil and Gas Plan Amendment (BLM 1991) included the following at page 3: “697,720 acres of BLM-administered mineral estate within the Glenwood Springs Resource Area are open to oil and gas leasing and development, subject to lease terms and (as applicable) lease stipulations” (BLM 1991, page 3). This decision was carried forward unchanged in the 1999 ROD and RMP amendment at page 15 (BLM 1999b): “In areas being actively developed, the operator must submit a Geographic Area Proposal (GAP) [currently referred to as a Master Development Plan, MDP] that describes a minimum of 2 to 3 years of activity for operator controlled leases within a reasonable geographic area.”

Discussion: The Proposed Action is in conformance with the 1991 and 1999 RMP amendments cited above because the Federal mineral estate proposed for development is open to oil and gas leasing and development. The 1999 RMP amendment requires multi-year development plans known at that time as Geographic Area Plans (GAPs) for lease development over a large geographic area. However, the 1999 RMP amendment also provides exceptions to that requirement for individual or small groups of exploratory wells drilled in relatively undrilled areas outside known high production areas. The Proposed Action is therefore in conformance with the exception to the requirement to require operators to submit Master Development Plans (MDPs), previously known as Geographic Area Plans (GAPs).

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

During its internal scoping process for this Environmental Assessment (EA), pursuant to the National Environmental Policy Act (NEPA), BLM resource specialists identified the following elements of the natural and human environment as present in the project vicinity and potentially affected by the project:

Access and Transportation	Native American Religious	Special Status Species
Air Quality	Concerns	Vegetation
Cultural Resources	Noise	Visual Resources
Geology and Minerals	Riparian and Wetland Areas	Wastes, Hazardous and Solid
Invasive Non-Native Plants	Socio-Economics	Water Quality, Surface and Ground
Migratory Birds	Soils	Wildlife, Aquatic and Terrestrial

Access and Transportation

Affected Environment

The project area is accessed from Interstate 70 (I-70), Rulison Exit, by traveling along various Garfield County Roads until arriving at Beaver Creek Road (CR317), then traveling approximately 2.7 miles south to the private access road to the existing pads.

Environmental Consequences

Proposed Action

Existing private roads serve both well pads. No new construction is planned although additional gravel surfacing would be planned prior to drill rig mobilization.

The Proposed Action would result in a substantial increase in truck traffic related to the development of the 39 wells. The largest increase would be during rig-up, drilling, and completion activities. Data indicate that approximately 1,160 truck trips over a 30-day period would be required to support the drilling and completion of each well (Table 1). Once the wells are producing, traffic would decrease to occasional visits for monitoring or maintenance activities. Each well may have to be recompleted once per year, requiring three to five truck trips per day for approximately 7 days.

Table 1. Traffic Associated with Drilling and Completion Activities		
<i>Vehicle Class</i>	<i>Trips per Well</i>	<i>Percentage of Total</i>
16-wheel tractor trailers	88	7.6%
10-wheel trucks	216	18.6%
6-wheel trucks	452	39.0%
Pickup trucks	404	34.8%
Total	1,160	100.0%
Source: BLM 2006. Note: Trips by different vehicle types are not necessarily distributed evenly during the drilling process. Drilling and completion period is approximately 30 days per well.		

Degradation of field development roads may occur due to heavy equipment travel and fugitive dust and noise would be created. Mitigation measures (Appendix A) would be required as COAs to ensure that adequate dust abatement and road maintenance occur.

No Action Alternative

Under this alternative, the traffic impacts related to drilling, completing, servicing and producing the 16 Federal wells would not occur resulting in a reduction in traffic compared to the Proposed Action.

Air Quality

Affected Environment

Colorado Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS) are health-based criteria for the maximum acceptable concentrations of air pollutants in areas of public use. Although specific air quality monitoring has not been conducted within the project area,

regional air quality monitoring has been conducted in Rifle and elsewhere in Garfield County. Air pollutants measured in the region for which ambient air quality standards exist include: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter less than 10 microns (μ) in diameter (PM₁₀) and less than 2.5 μ in diameter (PM_{2.5}), and sulfur dioxide (SO₂).

The project area lies within Garfield County, which has been described as an attainment area under CAAQS and NAAQS. An attainment area is an area where ambient air pollution quantities are below (i.e., better than) NAAQS standards. As shown in Table 2, regional background values are well below established standards, and all areas within the cumulative study area are designated as attainment for all criteria pollutants.

Table 2. Air Pollutant Background Concentrations, Colorado and National Ambient Air Quality Standards, and Prevention of Significant Deterioration (PSD Increments)					
Pollutant/Averaging Time		Measured Background Concentration	Colorado and/or National AAQS	Incremental Increase Above Legal Baseline PSD Class I/ II	
Carbon Monoxide (CO) ¹	1-hour	1,160 μg/m ³	40,000 μg/m ³ (35 ppm)	n/a	n/a
	8-hour	1,160 μg/m ³	10,000 μg/m ³ (9 ppm)	n/a	n/a
Nitrogen Dioxide (NO ₂) ²	Annual	10 μg/m ³	100 μg/m ³ (0.053 ppm)	2.5 μg/m ³	25 μg/m ³
Ozone ³	8-hour	149 μg/m ³ (highest)	147 μg/m ³ (0.075 ppm)	n/a	n/a
Particulate Matter (PM ₁₀) ¹	24-hour	114 μg/m ³ (highest)	150 μg/m ³	8 μg/m ³	30 μg/m ³
Particulate Matter (PM _{2.5}) ⁴	24-hour	40 μg/m ³ (highest)	35 μg/m ³	n/a	n/a
	Annual	11.2 μg/m ³	15 μg/m ³	n/a	n/a
Sulfur Dioxide (SO ₂) ⁵	3-hour	24 μg/m ³	1,300 μg/m ³ (0.5 ppm)	25 μg/m ³	512 μg/m ³
	24-hour	13 μg/m ³	365 μg/m ³ (0.14 ppm)	5 μg/m ³	91 μg/m ³
	Annual	5 μg/m ³	80 μg/m ³ (0.03 ppm)	2 μg/m ³	20 μg/m ³

¹ Background data collected in Rifle, 2008; highest levels recorded in April (Air Resource Specialists 2009).
² Background data collected by EnCana at site north of Parachute, 2007 (CDPHE 2008).
³ Background data collected in Rifle, 2008; highest levels recorded in July (Air Resource Specialists 2009).
⁴ Background data collected in Rifle, September - December 2008; highest levels recorded in December (Air Resource Specialists 2009).
⁵ Background data collected at Unocal site, 1983-1984 (CDPHE 2008).

Federal air quality regulations are enforced by the Colorado Department of Public Health and Environment (CDPHE) through the delegated authority of the U.S. Environmental Protection Agency (EPA). The Prevention of Significant Deterioration (PSD) Program within CDPHE is designed to limit incremental increases for specific air pollutant concentrations above a legally defined baseline level, as defined by an area's air quality classification. Incremental increases in PSD Class I areas are strictly limited, while increases allowed in Class II areas are less strict.

The surrounding areas are classified as PSD Class II. The PSD Class I areas within 100 miles of the project area are the Flat Tops Wilderness (45 miles NE), Maroon Bells–Snowmass Wilderness (50 miles SE), West Elk Wilderness (60 miles SE), Black Canyon of the Gunnison National Park (45 miles S), Eagles Nest Wilderness (90 miles E), and Arches National Park (65 miles SW). Dinosaur National Monument (55 miles NW) is listed as a Federal Class II area, but is regulated as a Class I area for SO₂ by CDPHE. These sensitive areas have the potential to be impacted by cumulative project source emissions. Regional background pollutant concentrations and NAAQS, CAAQS, and PSD Class I and II increments are also presented in Table 2.

Environmental Consequences

Proposed Action

CDPHE, under its EPA-approved State Implementation Plan (SIP), is the primary air quality regulatory agency responsible for determining potential impacts once detailed industrial development plans have been made; those development plans are subject to applicable air quality laws, regulations, standards, control measures, and management practices. Therefore, CDPHE has the ultimate responsibility for reviewing and permitting any project's air quality impacts prior to its operation. Unlike the conceptual "reasonable but conservative" engineering designs used in NEPA analyses, any CDPHE air quality preconstruction permitting required would be based on site-specific, detailed engineering values, which would be assessed in CDPHE's review of the permit application.

Air quality would decrease during construction of the GV15-36 and RWF33-36 pads, roadwork, wells, and pipelines. Pollutants generated during these activities would include combustion emissions and fugitive dust associated with construction equipment and vehicles. Construction activities would occur between 7:00 a.m. and 6:00 p.m. each day for a period of approximately two weeks. Construction of the road, pad, and pipeline would take up to 6 weeks; much of this construction would occur concurrently. Once construction activities are complete, air quality impacts associated with these activities would also cease.

Emissions of volatile organic compounds (VOCs) are dependent on the characteristics of the condensate, tank operations, and production. The air impacts associated with the condensate tanks are anticipated to be minor, but VOC emissions would be controlled as required under CDPHE Regulation 7. If deemed necessary by the State, Williams may need to install a vapor recovery or thermal destruction system to reduce VOC concentrations.

The Roan Plateau RMPA/EIS describes potential effects from oil and gas development (BLM 2006:4-26 to 4-37). Analysis was completed with regard to greenhouse gas emissions, a near-field and far-field analysis for "criteria pollutants" (particulate matter [PM₁₀ and PM_{2.5}], carbon monoxide, sulfur dioxide, and nitrogen oxides) and hazardous air pollutants (benzene, ethylbenzene, formaldehyde, hydrogen sulfide, toluene, and xylenes). Sulfur and nitrogen deposition, acid neutralizing capacity, and a visibility screening analysis were also completed in the Roan Plateau RMPA and EIS. Because the visibility screening analysis showed potential impacts at one or more Class I areas, a refined visibility analysis was also completed. The refined visibility analysis indicated a "just noticeable" impact on visibility for one day each at two Class I areas (Black Canyon of the Gunnison National Park and the Mt. Zirkel Wilderness). For the other pollutants analyzed, the implementation of oil and gas development under the Roan Plateau RMPA/EIS would have either no or negligible long-term adverse impacts on air quality.

At present, the CRVFO has approved fewer APDs than the number used in air quality modeling for the Roan Plateau RMPA/EIS, although that number (1,582) is being approached and may be reached in Calendar Year 2011. The BLM does not consider 1,582 wells to represent a cap on the number of APDs that can be approved pursuant to the Roan air modeling but instead views that number as an assumption used in developing inputs to the model, just as several other assumptions were used as inputs. However, to ensure that air impacts remain do not exceed those indicated by the Roan modeling, the CRVFO is currently approving only time-critical APDs and deferring approval of other APDs until publication of a new air quality model recently completed in conjunction with an RMP revision currently underway.

To mitigate dust generated by construction and vehicular travel on unpaved access roads, the operator would be required to implement dust abatement strategies as needed by watering the access road and

construction areas and/or by applying a surfactant approved by the Authorized Officer (Appendix A). Additionally, the operator would be required to apply gravel to the access road to a compacted depth of 6 inches, further reducing fugitive dust emissions (Appendix A).

Since the current land use plan was approved, ongoing scientific research has identified the potential impacts of “greenhouse gases” (GHGs) and their effects on global atmospheric conditions. These GHGs include carbon dioxide, methane, nitrous oxide, water vapor, and several trace gases. Through complex interactions on a global scale, these GHG emissions are believed by many experts to cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the Earth back into space.

In 2001, the Intergovernmental Panel on Climate Change (IPCC) predicted that by the year 2100, global average surface temperatures would increase 1.4 to 5.8°C (2.5 to 10.4°F) above 1990 levels. The National Academy of Sciences (2007) supports these predictions, but has acknowledged that there are uncertainties regarding how climate change may affect different regions. In 2007, the IPCC also concluded that “warming of the climate system is unequivocal” and “most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic (man-made) greenhouse gas concentrations” (National Academy of Sciences 2007). Other theories about the effect of GHGs on global climate change exist.

The assessment of GHG emissions and climate change remains in its formative phase. Therefore, it is not yet possible to know with certainty the net impact to climate from GHGs produced globally over the last century or from those produced today. The lack of scientific tools designed to predict climate change on regional or local scales limits the ability to quantify potential future impacts of climate change on the specific area of the Proposed Action. While any oil and gas development project may contribute GHGs to the atmosphere, these contributions would not have a significant effect on a phenomenon occurring at the global scale believed by some to be due to more than a century of human activities.

No Action Alternative

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action. Because the operator also intends to drill private wells from both of the existing private surface well pads, the only difference in the impact assessment under the No Action Alternative is that 23 private wells would be drilled instead of the planned 39 wells. The 1350 feet of new pipeline installation between the RWF32-36 and RWF33-36 pads would also occur in this alternative to move the produced gas from the private wells into the ETC gathering system.

Cultural Resources

Affected Environment

A Class III cultural resource inventory (CRVFO# 1111-33) was conducted specifically for the proposed GV15-36 and RWF33-36 well pad locations and related linear routes project. The inventory and pre-field file searches of the Colorado SHPO database and CRVFO cultural records identified four sites and eleven isolated finds within the project area. Two of the sites and all of the isolated finds were determined as not eligible for the National Register of Historic Places (NRHP), while the remaining two sites were identified as “need data” sites. “Need data” sites are treated as potentially eligible. Therefore, two “historic properties” were identified as being within the area of the Proposed Action. “Historic properties” are cultural resources that are eligible or potentially eligible for inclusion on the NRHP.

Environmental Consequences

Proposed Action

Both of the “need data” sites (5GF4518 and 4519.1) are either crossed by or adjacent to the existing private access road for the project well pads. The implementation of the Proposed Action would have no direct impacts to these two “need data” sites, as the only activity in the area associated with the project will be limited to maintenance on the existing access road. Although the segment of 5GF4519.1 (known as the Hill Ditch) within the project area and which runs under the existing access road has no features that would make it eligible, other non-inventoried segments outside the project area may be eligible for the NRHP and thus the ditch as a whole will be treated as a “need data” site until additional inventory can make a determination.

Based on the above, the BLM made a determination of “**No Historic Properties Affected.**” This determination was made in accordance with the 2001 revised regulations [36CFR 800.4(d)(1)] for Section 106 of the National Historic Preservation Act (16U.S.C 470f), the BLM/State Historic Preservation Officer (SHPO) Programmatic Agreement (1997) and Colorado Protocol (1998)]. As the BLM has determined that the Proposed Action would have no direct impacts to known “historic properties,” no formal consultation was initiated with the SHPO.

A standard Education/Discovery COA for cultural resource protection will be attached to the APD’s Conditions of Approval. The importance of this COA should be stressed to the operator and its contractors, including informing them of their responsibilities to protect and report any cultural resources encountered during construction operations.

Indirect, long-term cumulative impacts from increased access and the presence of project personnel could result in a range of impacts to known and undiscovered cultural resources in the vicinity of the project location. These impacts could range from accidental damage or vandalism to illegal collection and excavation.

No Action Alternative

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action. Because the operator also intends to drill private wells from both of the existing private surface well pads, the only difference in the impact assessment under the No Action Alternative is that 23 private wells would be drilled instead of the planned 39 wells. The 1350 feet of new pipeline installation between the RWF32-36 and RWF33-36 pads would also occur in this alternative to move the produced gas from the private wells into the ETC gathering system.

Geology and Minerals

Affected Environment

The development area is located near the eastern margin of the Colorado Plateau physiographic province (Fenneman 1946), a region characterized by dissected plateaus of strong relief. A broad, asymmetric, southeast-northwest trending structural basin, the Piceance Basin contains stratified sediments ranging in age from Cambrian through middle Tertiary up to 20,000 feet thick. The Basin lies between the White River uplift to the northeast, the Gunnison uplift to the south, and the Uncompahgre swell to the west (George 1927, Weiner and Haun 1960).

Bedrock exposed within the proposed development project is the Tertiary Wasatch Formation. The Wasatch Formation consists of variegated siltstone, claystone, and sandstones and ranges from 1,000 to 2,500 feet thick. The Wasatch Formation is underlain unconformably by the Mesaverde Group. The Mesaverde Group is composed of mudstones and sandstones with interlayered coal beds and ranges in thickness from about 3,000 to over 7,000 feet. The Mesaverde Group has also been referred to as the Mesaverde Formation, which includes informal subdivisions based on gas productivity characteristics.

In proposed development area, the Wasatch Formation is mantled by unconsolidated sedimentary surface deposits of Quaternary age in the form of colluvium. The thickness of these unconsolidated sediments is uncertain, but the depth to the underlying Wasatch Formation may be determined during construction excavation. Table 3 lists the geologic formations present within the proposed project area.

The Mesaverde Group is the target zone of the proposed drilling program. Made up of the Williams Fork and Iles Formations, sediments of the Mesaverde Group are composed of marine sandstones and transitional to non-marine beds of coal, shale, and sandstone. These sediments were deposited marginal to the great Cretaceous seaway. The oscillating shoreline of this sea, due to the rise and fall of sea level, left behind a complex of transgressive (encroaching toward land) and regressive (receding away from land) sedimentary sequences of nearshore and offshore sediments that define the Mesaverde Group.

Table 3. Geologic Formations within the Study Area				
<i>Map Symbol</i>	<i>Formation Name</i>	<i>Age</i>	<i>Characteristics</i>	<i>Location</i>
Qal	Quaternary alluvium deposits	Holocene	Chiefly silt, sand, and gravel	Flood plains, fans, and low terraces
Qgmf	Quaternary gravels and mud flow	Holocene	Stream, terrace, and outwash gravels	Streams, flood plains and fans
Two	Wasatch Formation	Eocene, Paleocene	Red, gray, and brown sandstone and siltstone and red, green and gray shale	Base of Mesas and predominant surface exposures both north and south of the Colorado River

Source: Donnell et al. 1989

Production is derived from three reservoir intervals, which include the Wasatch Formation, the Williams Fork and Iles Formations. The latter two make up the Upper Cretaceous Mesaverde Group. The proposed drilling program would target the sandstone sequences of the Upper Williams Fork Formation, which provide most of the natural gas production volumes (Lorenz 1989). The upper portions of the Williams Fork include fluvial point bar, floodplain, and swamp deposits. The Lower Williams Fork Formation includes delta front, distributary channel, strandplain, lacustrine and swamp environments (Hemborg 2000), while the sandstones and coalbeds of the Iles Formation were deposited in a wave-dominated coastal setting (Johnson 1989, Lorenz 1989). The source rocks are interbedded and thermally mature gas-prone shales, mudstones, siltstones, and coals. The reservoir rocks are the fine to medium-grained Williams Fork sandstones, varying in thickness from less than 10 feet to more than 50 feet (Spencer 1988), creating an interbedded relationship between source and reservoir. The trapping mechanism of the gas is both stratigraphic, related to vertical and lateral changes in the types of sediments being deposited, and diagenetic (post-depositional), related to changes in chemical and physical changes in the rocks during prolonged burial at great depth.

Environmental Consequences

If the proposed wells are proven feasible, initial production rates would be expected to be highest during the first few years of production, then decline during the remainder of the economic lives of the wells. Substantial reserves have been known to be trapped within the tight sands of these reservoirs since the late 1950s, but only within the last decade, and particularly within the last few years, has the integrated application of new technologies turned the tight gas sands of the Mesaverde Group into a profitable play (Kuuskraa 1997). Natural fracture detection, advanced log analysis, more rigorous well completions and recompletions, and denser spacing have increased the amount of recoverable gas within these reservoirs.

Natural gas production from the proposed wells would contribute to the draining of hydrocarbon-bearing reservoirs within the Mesaverde Group in this area, an action that would be consistent with BLM objectives for mineral production. Hydraulic fracturing or “fracing” will be utilized to create fractures within the formation to allow gas production from the wells. Tight gas sands refer to low permeability sandstone reservoirs that produce primarily dry natural gas. Typically, these reservoirs cannot be produced at economic flow rates or volumes unless the well is stimulated by hydraulic fracture treatment (Holditch, 2006). The amount of natural gas that may be potentially produced can only be estimated based on production rates from nearby wells and adjacent fields. Reserves have been estimated to approach 2 billion cubic feet (bcf) of natural gas per well (Vargas and Davis, 2006).

Casing programs have been designed to specifically prevent hydrocarbon migration from gas-producing strata penetrated by the wellbore during drilling, initial production and after completion of the well. Identification of potential fresh water bearing zones, aquifers, gas producing zones, and over- and under-pressured zones are incorporated into drilling scenarios for the proposed wells. Estimates of what depth these zones would be encountered are used to determine drilling fluids, fluid densities, surface casing depths, and production planning. If one of these identified zones is encountered during drilling, cement volumes will be adjusted to isolate that zone. This is designed to prevent accidental contamination or leakage of hydrocarbons or fracturing fluids into other productive zones within the wellbore.

No Action Alternative

Under the No Action Alternative, the Federal wells would not be approved. Under this alternative, the geology and minerals impacts related to drilling, completing, servicing and producing the 16 Federal wells would not occur resulting in a reduction compared to the Proposed Action.

Invasive Non-Native Plants

Affected Environment

The existing pads are located in a pinyon-juniper (*Pinus edulis-Juniperus osteosperma*) community with Wyoming big sagebrush (*Artemisia tridentata* subsp. *wyomingensis*) present in the openings. The area is relatively free of invasive non-native species with the exception of a low density of Russian-thistle (*Salsola* sp.) and kochia (*Bassia* sp.) found throughout the project area.

Environmental Consequences

Proposed Action

Surface-disturbing activities provide a niche for the invasion and establishment of invasive, non-native species, particularly when these species are already present in the surrounding area. Because invasive,

non-native species are present in the project area, the potential for invasion following construction activities is high. Mitigation measures designed to minimize the spread of these species would be attached to well APDs as COAs (see Appendix A).

No Action Alternative

Because the No Action Alternative would include development of private wells not requiring Federal action, it would result in the same amount of surface disturbance as the Proposed Action. Therefore, impacts from invasive non-native species would be similar.

Migratory Birds

Affected Environment

The Migratory Bird Treaty Act (MBTA) includes native passerines (flycatchers and songbirds) as well as birds of prey, migratory waterbirds (waterfowl, wading birds, and shorebirds), and other species such as doves, hummingbirds, swifts, and woodpeckers. Within the context of the MBTA, “migratory” birds include non-migratory “resident” species as well as true migrants, essentially encompassing virtually all native bird species. For most migrant and resident species, nesting habitat is of special importance because it is critical for supporting reproduction in terms of both nesting sites and food. In addition, because birds are generally territorial during the nesting season, their ability to access and utilize sufficient food is limited by the quality of the territory occupied. During non-breeding seasons, birds are generally non-territorial and able to feed across a larger area and wider range of habitats.

Numerous migratory bird species occupy, or have the potential to occupy, the project area. Migratory bird species that are Federally listed under the Endangered Species Act of 1973, as amended, or classified by the BLM as sensitive species, are addressed under the section on Special Status Species. The current section addresses migratory birds that may inhabit the proposed project area. Emphasizing the need to conserve declining species, the U.S. Fish and Wildlife Service (USFWS) has published a list of Birds of Conservation Concern (BCC) that deserve prompt conservation attention to stabilize or increase populations or to secure threatened habitats. This section also addresses species within the project area that listed as BCC species (USFWS 2008). This analysis focuses on BCC species, non-BCC species that are Neotropical (long-distance) migrants, and raptors—three groups highly vulnerable to habitat loss or modification on their breeding grounds.

Species on the BCC list that are potentially present in the project area, based on habitat preferences and known geographic ranges, include the pinyon jay (*Gymnorhinus cyanocephalus*), juniper titmouse (*Baeolophus griseus*), Brewer’s sparrow (*Spizella breweri*), and Cassin’s finch (*Carpodacus cassinii*). The flammulated owl and Brewer’s sparrow are also listed as BLM sensitive species and addressed in the section on Special Status Species. The potential for occurrence of Lewis’s woodpecker is low due to its close association with riparian woodlands with mature cottonwoods (*Populus* spp.) and to pinyon-juniper woodlands with a component of ponderosa pine (*Pinus ponderosa*)—neither of which is prevalent in the project vicinity.

Among the other BCC species listed above, the pinyon jay and juniper titmouse are almost totally associated with extensive stands of pinyon pine and juniper trees, which are not prevalent in the project area but extensive in the project vicinity. Cassin’s finch nests at higher elevations, primarily in ponderosa pine, Douglas-fir (*Pseudotsuga menziesii*), or mixed stands of Engelmann spruce (*Picea engelmannii*) and subalpine fir (*Abies latifolium*). However, Cassin’s finches often disperse to lower elevations following the breeding season and may remain there until the following spring.

Juniper titmice observed and heard calling in the juniper woodlands south of GV15-36 were most likely nesting in the area. Pinyon jays could be expected to forage in the juniper woodlands near the pads, with the best nesting habitat south of GV15-36. Brewer's sparrows may potentially occupy the area; the best sagebrush habitat is between GV15-36 and RWF32-36.

Non-BCC species likely to occur in the pinyon-juniper within the project area or venturing into the area from more extensive habitats nearby include Neotropical migrants such as common nighthawk (*Chordeiles minor*), poorwill (*Phalaenoptilus nuttallii*), broad-tailed hummingbird (*Selasphorus platycercus*), black-chinned hummingbird (*Archilochus alexandri*), western kingbird (*Tyrannus verticalis*), Say's phoebe (*Sayornis saya*), mountain bluebird (*Sialis currucoides*), western bluebird (*S. mexicana*), plumbeous vireo (*V. plumbeus*), black-throated gray warbler (*Dendroica nigrescens*), lesser goldfinch (*Spinus psaltria*), and chipping sparrow (*Spizella passerina*). Common residents or short-distance migrants include the mountain chickadee (*Poecile gambeli*), American robin (*Turdus migratorius*), Townsend's solitaire (*Myadestes townsendi*), and house finch (*Carpodacus mexicanus*).

Raptors use the project area for nesting and hunting activities. Nesting habitat is found primarily in the pinyon-juniper woodlands of the project vicinity and in narrowleaf cottonwoods (*Populus angustifolia*) along Beaver Creek. Species most likely to nest within or near the project area include the American kestrel (*Falco sparverius*), sharp-shinned hawk (*Accipiter striata*), Cooper's hawk (*A. cooperi*), red-tailed hawk (*Buteo jamaicensis*), great horned owl (*Bubo virginiana*), and northern pygmy-owl (*Glaucidium gnoma*).

One active and one inactive raptor nest were found during raptor surveys of the project area (WestWater 2011). An active red-tailed hawk nest was found along Beaver Creek in a tall cottonwood tree approximately 50 yards ~~east-west~~ of CR 317 and 0.125 mile east of the existing RWF 33-36 pad. At the time of the survey, the nest contained two chicks, which have since fledged. The inactive raptor nest found during the survey was in juniper tree along an irrigation ditch adjacent to an irrigated pasture. This nest lies about 0.16 mile north of the access road and 0.33 mile from the GV 15-36 pad. It was undetermined what raptor species has used this nest in the past.

Environmental Consequences

Proposed Action

Under the Proposed Action, 1.7 acres of new disturbance would occur on private land as a result of pipeline construction. The existing surface disturbance of both pads totals 15.2 acres on private land. Following successful interim reclamation, the disturbance would be reduced to 4.0 acres.

Removal of pinyon-juniper, sagebrush, and mixed shrub species would result in loss of existing and potential nesting sites for perching birds. While habitat loss and fragmentation may affect individual birds, it is not expected to adversely impact a species as a whole. If construction, drilling, or completion activities occur during the nesting season, visual and noise disturbance near active nests could cause nest abandonment and failure, reducing the productivity of affected species. Construction activity during the nesting season could also result in the destruction of clutches and/or mortality of nestlings.

The operator remains subject to the MBTA, administered by the USFWS, which precludes the "take" of any raptor or most other native species. Under the Act, the term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The USFWS interprets "harm" and "kill" to include loss of eggs or nestlings due to abandonment or reduced

attentiveness by one or both adults as a result of disturbance by human activity, as well as physical destruction of an occupied nest.

The red-tailed hawk nest along Beaver Creek appears to have been active for several years, based on the large amount of nesting material it contains. It is unlikely that the Proposed Action would affect raptors using the territory, including during the nesting season, based on its recent and historic use in proximity to human activity. Red-tailed hawks often show a high degree of tolerance to human activities and become habituated to the presence of humans nearby. Although relatively close to the nest, the location of the RWF33-36 pad on a wooded mesa significantly higher than the creek may contribute to the tolerance of this pair to activities on that pad and the RWF32-36 pad. The inactive nest north of the access road to GV15-36 is located at a great enough distance from the road that interference with future use of the nest is unlikely (WestWater 2011).

Although the two raptor nests found during surveys are unlikely to be affected by the Proposed Action, the CRVFO would apply a 60-day timing limitation (TL) to prohibit vegetation removal and the initiation of construction, drilling, and completion activities from April 1 through May 31. Since the Federal oil and gas lease being developed does include a lease stipulation for raptor nesting, 60 days is the maximum TL period that the BLM can apply as a COA. Appendix A provides details of this COA and describes potential bases for the granting of an exception to the TL. However, the operator remains responsible for compliance with the MBTA if activities are initiated while either nest is active but outside the 60-day TL.

No Action Alternative

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action. However, the amount of surface disturbance would not change, and human disturbance would be only slightly reduced due to the drilling of the private wells. Consequently, impacts to migratory birds would be similar under the two alternatives.

Native American Religious Concerns

Affected Environment

The proposed GV15-36 and RWF33-36 well pad locations and related linear routes project is located within a larger area identified by the Ute Tribes as part of their ancestral homeland. Cultural resource inventories (see section on Cultural Resources) were conducted to determine if there were any areas that might be culturally sensitive to Native Americans. No sensitive areas were identified during the inventories and none are currently known in the proposed project area.

Environmental Consequences

Proposed Action

At present, no Native American concerns are known within the project area and none were identified during the inventories. The Ute Tribe of the Uintah and Ouray Bands, the primary Native American tribe in this area of the CRVFO, have indicated that they do not wish to be consulted for small projects or projects where no Native American areas of concern have been identified either through survey or past consultations. Therefore, formal consultation was not undertaken. If new data are disclosed, new terms and conditions may have to be negotiated to accommodate their concerns.

Although the Proposed Action would have no direct impacts, increased access and personnel in the vicinity of the proposed project could indirectly impact unknown Native American resources ranging from illegal collection to vandalism.

The National Historic Preservation Act (NHPA) requires that if newly discovered cultural resources are identified during project implementation, work in that area must stop and the agency Authorized Officer notified immediately (36 CFR 800.13). The Native American Graves Protection and Repatriation Act (NAGPRA), requires that if inadvertent discovery of Native American Remains or Objects occurs, activity must cease in the area of discovery, a reasonable effort made to protect the item(s) discovered, and immediate notice made to the agency Authorized Officer, as well as the appropriate Native American group(s) (IV.C.2). Notice may be followed by a 30-day delay (NAGPRA Section 3(d)). Further actions also require compliance under the provisions of NHPA and the Archaeological Resource Protection Act. Williams will notify its staff and contractors of the requirement under the NHPA, that work must cease if cultural resources are found during project operations. A standard Education/Discovery COA for the protection of Native American values would be attached to the APDs (Appendix A). The importance of these COAs should be stressed to the operator and its contractors, including informing them of their responsibilities to protect and report any cultural resources encountered. The operator and its contractors would be made aware of the requirements under the NAGPRA.

No Action Alternative

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action. Because the operator also intends to drill private wells from both of the existing private surface well pads, the only difference in the impact assessment under the No Action Alternative is that 23 private wells would be drilled instead of the planned 39 wells. The 1,350 feet of new pipeline installation between the RWF32-36 and RWF33-36 pads would also occur in this alternative to move the produced gas from the private wells into the ETC gathering system. Direct or indirect impacts to cultural resources would be essentially the same under both alternatives.

Noise

Affected Environment

Noise is generally described as unwanted sound, weighted and noise intensity (or loudness) is measured as sound pressure in units of decibels (dBAs). The decibel scale is logarithmic, not linear, because the range of sound that can be detected by the human ear is so great that it is convenient to compress the scale to encompass all the sounds that need to be measured. Each 20-unit increase in the decibel scale increases the sound loudness by a factor of 10.

Sound levels have been calculated for areas that exhibit typical land uses and population densities. In rural recreational areas, ambient sound levels are expected to be approximately 30 to 40 dBA (EPA 1974, Harris 1991). As a basis for comparison, the noise level during normal conversation of two people 5 feet apart is 60 dBA. The Proposed Action would lie within a rural setting approximately 1.5 miles south of I-70. The closest residence would be 1,000 feet south of RWF33-36 and 1,500 feet south of GV15-36. Noise levels in the project area are presently created by ranching/farming operations, traffic serving the existing nearby well pads and ongoing drilling and completion activities.

Environmental Consequences

Proposed Action

The project would result in increased levels of noise during the construction, drilling, and completion phases. The noise would be most noticeable along the roads used to haul equipment and at the pad location. Drilling activities are subject to noise abatement procedures as defined in the COGCC Rules and Regulations (Aesthetic & Noise Control Regulations). Operations involving pipeline or gas facility installation or maintenance, compressors, the use of a drilling rig, completion rig, workover rig, or stimulation are subject to the maximum permissible noise levels for industrial zones. The 2006 revised COGCC noise control rules call for noise levels from oil and gas operations at any well site and/or gas facility to comply with the maximum permissible levels (Table 4) at a distance of 350 feet. Periodically the noise level may increase to 10 db(A) above levels in Table 4 for no more than 15 minutes in a 1-hour period. Operations involving pipeline or gas facility installation or maintenance, the use of a drilling rig, completion rig, workover rig, or stimulation is subject to the maximum permissible noise levels for industrial zones. Given that the proposed project activities are within 1,000 feet of an occupied structure, the agricultural/rural standard is applicable. The allowable noise level for periodic impulsive or shrill noises is reduced by 5 dBA from the levels shown (COGCC 2006).

Table 4. Noise Standards for Light industrial, Residential/Agriculture/Rural		
<i>Zone</i>	<i>7:00 A.M. to 7:00 P.M</i>	<i>7:00 P.M. to 7:00 A.M</i>
Light Industrial	70 dBA	65 dBA
Residential/Agricultural/Rural	55 dBA	50 dBA

Short-term (7- to 14-day) increases in nearby noise levels would characterize road and well pad construction while the existing cuttings pit is re-opened. Based on the Inverse Square Law of Noise Propagation (Harris 1991) and an typical noise level for construction sites of 65 dBA at 500 feet (Table 5), project-related noise levels would be approximately 59 dBA at a distance of 1,000 feet, approximating active commercial areas (EPA 1974). These increased noise levels would be in addition to levels of noise that are already above background levels due to current oil and gas developments in the area. As stated above, the nearest residence is approximately 1,000 feet away.

Table 5. Noise Levels at Typical Construction Sites and along Access Roads			
<i>Equipment</i>	<i>Noise Level (dBA)</i>		
	<i>50 feet</i>	<i>500 feet</i>	<i>1,000 feet</i>
Air Compressor, Concrete Pump	82	62	56
Backhoe	85	65	59
Bulldozer	89	69	63
Crane	88	68	62
Front End Loader	83	83	57
Heavy Truck	88	68	62
Motor Grader	85	65	59
Road Scraper	87	67	61
Tractor, Vibrator/Roller	80	60	54

Sources: BLM (1999a), La Plata County (2002)

Noise impacts from drilling and completion activities would last approximately 45 to 60 days at each well. Noise would occur continuously, 24 hours per day, during the drilling and completion period. Based on a measured noise level of 68 dBA at 500 feet, actions associated with drilling and completion would generate approximately 62 dBA at 1,000 feet. This noise level approximates that associated with light industrial activities (EPA 1974). These increased noise levels would be in addition to levels of noise that are already above background levels due to current oil and gas developments in the area.

Traffic noise would also be elevated as a consequence of the Proposed Action. The greatest increase would be along access roads during the drilling and completion phases. Based on the La Plata County data presented in Table 5, approximately 68 dBA of noise (at 500 feet) would be created by each fuel and water truck that travels these roads. Less noise would be created by smaller trucks and passenger vehicles such as pickup trucks and sport utility vehicles. Although the duration of increased noise from this source would be short, it would occur repeatedly during the drilling and completion phases.

Noise impacts would decrease during the production phase but would remain background noise levels. During maintenance and well workover operations, noise levels would temporarily increase above those associated with routine well production. These increased noise levels would be in addition to levels of noise that are already above background levels due to current oil and gas developments in the area. Traffic noise levels would affect residences located along County roads that provide primary access into the area. There is one residence situated approximately 1,000 feet south of the RWF33-36 and 1,500 feet south of the GV15-36 pad. Given the close proximity of the house, uphill of the site, noise reduction devices may be required if the noise levels greater than 55 dBA are found to impact the resident.

No Action Alternative

Under this alternative, the noise impacts related to drilling, completing, servicing and producing the 16 Federal wells would not occur resulting in reduced traffic and drilling noise compared to the Proposed Action.

Riparian and Wetland Areas

Affected Environment

No riparian or wetland areas are present adjacent to the pads or would be directly affected by the project. However, Beaver Creek, which drains northward to the Colorado River, lies adjacent to CR317, which is the primary access road into the general project area (shown on Figure 1 as lying east of the RWF33-36 and 32-26 well pads). The narrow but well-developed riparian corridor along Beaver Creek in the vicinity of the project area supports trees and a variety of tall deciduous shrubs that provide nesting and feeding sites for wildlife species not associated with the more xeric pinyon-juniper habitat adjacent to the well pads. The stream, which is perennial, provides habitat for a variety of aquatic life, including special status fish species (see the sections on Special Status Species and Aquatic Wildlife).

Environmental Consequence

Because of the proximity of CR317 to Beaver Creek and its riparian habitat, adverse impacts from oil and gas activities access along the road have probably resulted from truck traffic, including noise and aerial deposition of dust from the roadway. The magnitude of these impacts has not been quantified, and they are primarily short-term in nature during intensive drilling and completion activities, gradually declining as oil and gas wells transition into long-term maintenance and production. BLM requirements for dust abatement (Appendix A) reduce fugitive dust substantially. The Proposed Action would increase slightly

the amount of truck traffic on a portion of CR317 adjacent to Beaver Creek. However, in comparison to the existing traffic volumes—and increased volumes that would accompany continued oil and gas development in the project vicinity—any contribution of impacts from the Proposed Action would be small and unlikely to represent a discernible change from existing habitat quality and use.

No Action Alternative

Under this alternative, private wells would be added to the two well pads under the authority of the COGCC, and traffic along CR317 associated with non-project oil and gas activities would continue. Therefore, potential impacts to the Beaver Creek riparian corridor under the No Action Alternative would be only slightly less than under the Proposed Action and would not be qualitatively different.

Socio-Economics

Affected Environment

The project area is located within Garfield County, Colorado. The population of Garfield County grew by an average of approximately 3% per year from 2000 to 2005, resulting in an increase from 44,236 to 50,379 residents (DOLA 2010). Population growth in Garfield County is expected to more than double over the 20-year period from approximately 50,000 in 2005 to approximately 106,500 in 2025 (DOLA 2010).

In 2009, industry groups in Garfield County with the highest percentage of total employment were construction 15 percent, tourism 12 percent, retail trade 13 percent, and education and health 20% (Colorado Department of Labor and Employment 2010). An estimated 13.3% of the population was retired in the year 2000 and did not earn wages (Garfield County 2000). Employment in agriculture, forestry, hunting, and mining accounted for 8% of total employment (Colorado Department of Labor and Employment 2010).

Personal income in Garfield County has also risen, growing from \$504 million in 1990 to \$2.2 billion in 2008 (U.S. Department of Commerce 2008). Annual per capita income has grown in the same period; from about \$19,354 to \$40,166 (U.S. Department of Commerce 2008), and the average earnings per job in 2005 was approximately \$37,500 (Garfield County 2007). The communities of Parachute, Silt, and Rifle are the most affordable for housing, while the communities of Battlement Mesa, New Castle, and Glenwood Springs are the least affordable, with the cost to rent or own similar housing higher by 50% or more (BLM 2006).

Activities on public land in the vicinity of the project area are primarily ranching/farming, hunting, OHV travel, and the development of oil and gas resources. Hunters contribute to the economy because many require lodging, restaurants, sporting goods, guides and outfitting services, food, fuel, and other associated supplies. Big-game hunting, in particular, is viewed as critical to Garfield County, and especially the local community economies that depend on BLM and Forest Service public lands where most hunting occurs (BLM 2006). Expenditures by hunters in the Roan Plateau Planning Area alone have been estimated to be as much as \$1 million annually, with perhaps an additional \$1 million annually of indirect and local expenditures (CDOW 1995, cited in BLM 2006).

The growth of the oil and gas industry in the past 10 years has been increasingly important to local economies (BLM 2006). Gas production in Garfield County has increased dramatically during the 9 years from 70,309,038 (MCF) in 2000 to 575,697,025 (MCF) in 2009 (COGCC 2010). In addition, Garfield County is experiencing the fastest oil and gas development in Colorado with over 2,000 drilling

permits currently approved between July, 2009 and September, 2010 (COGCC 2010). While the number of workers employed in the mining and extraction industry in Garfield County has been shown to be only 1.7 percent, this number is considered misleading because some oil and gas employment has been incorporated as part of the construction sector statistics instead (BLM 2006). For example, in the year 2005, an estimated 4,000 persons were directly employed by gas development companies and their subcontractors in Garfield County (Garfield County 2009).

The Federal government makes “Payments in Lieu of Taxes” (PILT) to County governments to help offset property tax revenue lost of nontaxable Federal lands within County boundaries (BLM 2006). Payments are based on Federal acreage in the County for all land management agencies, including BLM, U.S. Forest Service (USFS), U.S. Fish and Wildlife Service (USFWS), and National Park Service (NPS). The amount may also be adjusted based on population and as appropriated by Congress. By formula, payments are decreased as other Federal funds, such as mineral royalty payments, increase. PILT received by Garfield County in the last five years has been as follows: \$808,348 in 2005; \$1,065,158 in 2006; \$1,078,087 in 2007; and \$1,078,521 in 2008; \$1,808,984 in 2009 (USDI 2010).

In addition to PILT payments, BLM shares revenue generated by commercial activities on public lands with State and County governments (BLM 2006). Federal mineral royalties are levied on oil and gas production from Federal mineral leases. Oil and gas lessees pay royalties equal to 12.5% of the wellhead value of oil and gas produced from public land. Half the royalty receipts are distributed to Colorado, and the amount distributed to Garfield County in 2002 attributable to oil and gas production was \$14.1 million. In 2001, the amount was \$5.5 million (BLM 2006). These funds are then allocated to fund County services, schools, and local communities.

Property tax revenue from oil and gas development has also become the largest source of public revenue in Garfield County (BLM 2006). In the year 2009, oil and gas assessed valuation in Garfield County amounted to approximately \$3.8 billion, or about 74% of total assessed value. Total tax revenues from property taxes and special district levies were \$130 million. Tax dollar distributions in 2009 were Schools 30.4 percent, County 32.3 percent, Special Districts 14.3 percent, Fire Districts 12.3 percent, Colleges 8.9 percent, and Towns 1.7% (Garfield County 2009).

The NEPA process requires a review of the environmental justice issues as established by Executive Order 12898 (February 11, 1994). The order established that each Federal agency identify any “disproportionately high and adverse human health or environment effects of its programs, policies, and activities on minority and low-income populations.” The Latino community is the only minority population of note in the vicinity of the project area. In 2000, 16.7% of the residents of Garfield County identified themselves as Hispanic or Latino, and this is consistent across the State (17.1 percent). African-Americans, American Indians, and Pacific Islanders account for less than 1% of the Garfield County population, which is below the State levels (Garfield County 2000).

Environmental Consequences

Proposed Action

The Proposed Action would positively impact the local economies of Garfield County through the creation or retention of job opportunities in the oil and gas industry and in supporting trades and services. In addition, local governments in Garfield County would experience an increase in tax and royalty revenues. Some minor economic loss to private landowners or guides may result from the potential displacement of big game and resulting reduction in big game hunting within the project area.

The Proposed Action could result in minor negative social impacts, including (1) decrease in the recreational character of the area, (2) reduced scenic quality, (3) increased dust levels, and (4) increased traffic. However, most of these impacts would be minor and limited to the relatively short duration of drilling and completion activities.

No Action Alternative

Under this alternative, the socio-economic impacts related to drilling, completing, servicing, and producing the 16 Federal wells would not occur, resulting in a traffic reduction compared to the Proposed Action.

Soils

Affected Environment

According to the *Soil Survey of Rifle Area, Colorado* (USDA 1985), the Proposed Action would occur on two soil complexes. The GV15-36 pad and pipeline would be constructed on the Ildefonso stony loam. This deep, well-drained soil is found on mesas, benches, and sides of valleys at elevations from 5,000 to 6,500 feet and slopes of 6% to 25%. This soil is formed in mixed alluvium derived primarily from basalt and may contain a small amount of aeolian material at the top of the unit. Surface runoff is rapid, and erosion hazard is moderate. Primary uses for these soils are limited grazing and wildlife habitat.

The RWF33-36 pad and pipeline would be located on the Ildefonso stony loam unit. This deep, well-drained, hilly soil is also found on mesas, sides of valleys, and alluvial fans at elevations from 5,000 to 6,500 feet and on slopes of 11% to 25%. The Potts soil is formed in sandstone, shale or basalt. The Ildefonso soil is formed in calcareous, basaltic alluvium and eolian material. Surface runoff for this soil is medium and erosion hazard is moderate. Primary uses for this soil include grazing and wildlife habitat.

Environmental Consequences

Proposed Action

The Proposed Action would involve surface disturbance for two expanded well pads and the connecting pipeline resulting in approximately 1.7 acres of vegetation loss and soil compaction and displacement. In general, the area that would be affected by the Proposed Action contains adequate vegetation buffers and low to moderate slopes that would reduce the potential for sediment transport to Beaver Creek and the Colorado River. However, construction activities would cause mixing of soil horizons, slight to moderate increases in local soil loss, loss of soil productivity, and sediment available for transport to surface waters. Noxious weed infestation resulting from disturbance would impact soil productivity. Potential for such soil loss and transport would increase as a function of slope, feature (pad, road, or pipeline route) to be constructed, and proximity to streams.

Most of the area to be disturbed consists of soils with moderate risk of erosion or slope instability. Throughout the affected area, the potential would also exist for accidental spills or leaks of petroleum products and hazardous materials during construction. These events would cause soil contamination and may decrease the soil fertility and revegetation potential. Long-term soil protection could be achieved by continued maintenance to reduce erosion, remediate soil contamination, and minimizing the size of the pad footprint through interim reclamation. Such impacts should be adequately mitigated by proper utilization of the standard and site-specific COAs. Following interim reclamation, it would be the responsibility of the operator to continue revegetation/reclamation efforts until vegetative communities on

disturbed surfaces are composed of seeded or other desirable vegetation, as determined by the BLM. Appropriate revegetation is important to prevent or minimize soil erosion and infestation of weeds.

No Action Alternative

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action. Because the operator also intends to drill private wells from both of the existing well pads on private surface, the surface disturbance and soil impacts would be the same as under the Proposed Action.

Special Status Species

Federally Listed, Proposed, or Candidate Plant Species

Affected Environment

According to the latest species list from the USFWS, the following Federally listed, proposed, or candidate plant species may occur within or be impacted by actions occurring in Garfield County: Parachute beardtongue (*Penstemon debilis*), DeBeque phacelia (*Phacelia submutica*), Colorado hookless cactus (*Sclerocactus glaucus*), and Ute ladies'-tresses orchid (*Spiranthes diluvialis*).

Environmental Consequences

Proposed Action

The results of a plant survey conducted in April 2011 indicate that there are no Federally listed, proposed, or candidate plant species or suitable habitat for these species in the project area. Therefore, the Proposed Action would have “**No Effect**” on these species.

No Action Alternative

The No Action Alternative would not cause impacts to any Federally listed, proposed, or candidate plants because these species do not occur in the area to be affected.

Federally Listed, Proposed, or Candidate Animal Species

Affected Environment

Eight species of Federally listed, proposed, or candidate threatened or endangered vertebrate species occur within Garfield County or may be affected by projects within the County. These species, their status, and their distributions and habitat associations in the region are summarized below:

Canada Lynx (*Lynx canadensis*). Federally listed as threatened. Canada lynx occupy high-latitude or high-elevation coniferous forests characterized by cold, snowy winters and an adequate prey base (Ruggiero et al. 1999). The U.S. Forest Service (USFS) has mapped suitable denning, winter, and other habitat for lynx within the White River National Forest (WRNF), portions of which are adjacent to BLM lands within the CRVFO. The mapped suitable habitat in the WRNF comprises several areas known as Lynx Analysis Units (LAUs). Several LAUs border BLM lands along the I-70 corridor from east of Wolcott to west of DeBeque. While BLM lands within the CRVFO area are generally not suitable habitat, they may support movement by animals dispersing to a new area or, potentially, moving to lower

elevations during severe winter weather in search of prey. The project area does not border the Battlement Creek LAU and therefore is not considered further in this document.

Mexican Spotted Owl (*Strix occidentalis*). Federally listed as threatened. This large owl nests, roosts, and hunts in mature coniferous forests in canyons and foothills. The only extant populations in Colorado are in the Pikes Peak and Wet Mountain areas of south-central Colorado and the Mesa Verde area of southwestern Colorado. Because no known occurrences or suitable habitats are present in the project vicinity, this species is not considered further.

Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*). Candidate for Federal listing. This secretive species occurs in mature riparian forests of cottonwoods and other large deciduous trees with a well-developed understory of tall riparian shrubs. Riparian areas in the project area do not provide suitable habitat for this species. It also is not known to occur in the cottonwood corridor along the Colorado River a few miles north of the project area; occurrence there is unlikely due to the patchy nature of the stands and the general lack of a tall-shrub understory. Because no suitable habitats are present in the project vicinity, this species is not considered further.

Razorback Sucker (*Xyrauchen texanus*), Colorado Pikeminnow (*Ptychocheilus lucius*), Humpback Chub (*Gila cypha*), and Bonytail Chub (*G. elegans*). Federally listed as endangered. These four species of Federally listed big-river fishes occur within the Colorado River drainage basin near or downstream from the project area. Designated Critical Habitat for the razorback sucker and Colorado pikeminnow includes the Colorado River and its 100-year floodplain west (downstream) from the town of Rifle. This portion of the Colorado River lies a few miles north of the project area. The nearest known habitat for the humpback chub and bonytail is within the Colorado River approximately 70 miles downstream from the project area. Occasionally, the bonytail is in Colorado west of Grand Junction, but its range does not extend east from that point. Only one population of humpback chub, at Black Rocks west of Grand Junction, is known to exist in Colorado.

Greenback Cutthroat Trout (*Oncorhynchus clarki stomias*). Federally listed as threatened. The greenback cutthroat trout was not identified on the USFWS list for Garfield County; however, recent surveys have identified a population in Cache Creek, located several drainages east of the project area. The greenback is the subspecies of cutthroat trout native to the Platte River drainage on the Eastern Slope of Colorado, while the Colorado River cutthroat trout (*O. c. pleuriticus*) is the subspecies native to Garfield County and throughout the Western Slope of Colorado. Although the occurrence of greenbacks in Cache Creek and potentially elsewhere in the CRVFO and WRNF areas is apparently the result of human intervention (e.g., sanctioned or *ad hoc* transplantation of fish from the Eastern Slope), its status as threatened applies to Western Slope populations. However, because drainages within the project area do not support this species, it is not considered further.

Environmental Consequences

Proposed Action

The Canada lynx, Mexican spotted owl, and western yellow-billed cuckoo are not expected to occur in the project vicinity based on habitat types present and documented occurrences. Therefore, the Proposed Action would have “**No Effect**” on these species.

The endangered Colorado River fishes could potentially be affected by the consumptive use of water taken from the Colorado River basin to support activities associated with the Proposed Action. Depletions in flows in the Colorado River and major tributaries are a major source of impacts to these

fishes due to changes in the flow regime that reduce the availability and suitability of spawning sites and habitats needed for survival and growth of the larvae. Principal sources of depletion in the Colorado River basin include withdrawals for agricultural or industrial uses, withdrawals for municipal water supplies, and evaporative losses from reservoirs. On average, approximately 0.77 acre-feet of Colorado River water is consumed during activities related to each oil and gas well. This is equivalent to 0.04 to approximately 0.04 cubic feet per second (cfs) of water throughout the typical 10-day drilling period for an oil and gas well in the CRVFO area.

In 2008, the BLM prepared a Programmatic Biological Assessment (PBA) addressing water-depleting activities associated with BLM's fluid minerals program in the Colorado River Basin in Colorado. In response to this PBA, the USFWS issued a Programmatic Biological Opinion (PBO) (ES/GJ-6-CO-08-F-0006) on December 19, 2008. The PBO concurred with BLM's effects determination of "**May Affect, Likely to Adversely Affect**" the Colorado pikeminnow, humpback chub, bonytail chub, or razorback sucker as a result of depletions associated with oil and gas projects. To offset the impacts, the BLM has set up a Recovery Agreement, which includes a one-time fee per well. The estimated depletions from the Proposed Action will be added to the CRVFO tracking log and submitted to the USFWS per the PBA/PBO at the end of the year to account for depletions associated with BLM's fluid mineral program. The calculated mitigation fees are used by the USFWS for mitigation projects and contribute to the recovery of these endangered species through restoration of habitat, propagation, and genetics management, instream flow identification and protection, program management, non-native fish management, research and monitoring, and public education.

Other potential impacts to these species include inflow of sediments from areas of surface disturbance and inflow of chemical pollutants related to oil and gas activities. Although the two well pads do not drain toward a perennial stream, the access road parallels Beaver Creek, which is a perennial stream that supports aquatic life and flows to the Colorado River. The slight, short-term increase in sediment load to Beaver Creek due to runoff or aerial deposition from adjacent CR317 is not expected to be significant, due to runoff and dust abatement COAs applied by the BLM. Even if sediment inflow to the Colorado River were to occur as a result of the slight traffic increase on CR317, the endangered big-river fishes are adapted to the naturally high sediment loads that characterize the Colorado River and its tributaries.

In contrast to inflow of sediments, the inflow of chemical pollutants could impact the endangered big-river fishes if concentrations are sufficient to cause acute effects. The potential for adverse impacts would be limited to the Colorado pikeminnow and razorback sucker, the two species known to occur within the CRVFO area. Spills or other releases of chemical pollutants as a result of oil and gas activities are infrequent in the CRVFO area due to the various design requirements imposed by BLM and the State of Colorado. In the event of a spill or accidental release in proximity to Beaver Creek, and thence to the Colorado River, the operator would be required to implement its Spill Prevention, Control, and Countermeasures (SPCC) plan, including such cleanup and mitigation measures as required by BLM or the State. For these reasons, and because any spills making their way into the Colorado River would be rapidly diluted to levels below that are not deleterious, or even detectable, the potential for adverse impacts from chemical releases is not considered significant.

No Action Alternative

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action. However, similar impacts would result from private wells to be developed from the same pads under the authority of COGG, and reductions in traffic along CR317 would be minor in comparison to all other traffic currently using the road.

BLM Sensitive Plant Species

Affected Environment

BLM sensitive plant species with habitat and/or occurrence records in Garfield County include DeBeque milkvetch (*Astragalus debequaeus*), Naturita milkvetch (*Astragalus naturitensis*), Piceance bladderpod (*Lesquerella parviflora*), Roan Cliffs blazing star (*Mentzelia rhizomata*), Harrington’s penstemon (*Penstemon harringtonii*), and Cathedral Bluffs meadow-rue (*Thalictrum heliophilum*).

Environmental Consequences

Proposed Action

A plant survey conducted in April 2011 indicated there are no BLM sensitive plant species or their habitats in the vicinity of the Proposed Action.

No Action Alternative

Since no BLM sensitive plant species occur in the project area, no impacts to these species would occur.

BLM Sensitive Animal Species

Affected Environment

BLM sensitive animal species with habitat and/or occurrence records in the portion of the CRVFO that includes the project area and vicinity are listed in Table 6.

Table 6. Special Status Wildlife Species Present or Potentially Present in the Project Area		
<i>Common Name</i>	<i>Habitat</i>	<i>Potential for Occurrence</i>
Fringed myotis, Townsend’s big-eared bat	Breed and roost in caves, trees, mines, and buildings; hunt over pinyon-juniper, montane conifers, and semi-desert shrubs.	Possible
Northern goshawk	Predominantly uses spruce/fir forests but also use Douglas-fir, various pines, and aspens.	Unlikely
Bald eagle	Nests and roosts in mature cottonwood forests along rivers, large streams, and lakes.	Present along Colorado River
Brewer’s sparrow	Nests in sagebrush shrublands, typically more extensive stands than in the project area..	Possible – Habitat Marginal
Midget faded rattlesnake	Found in cold desert dominated by sagebrush and with an abundance of rock outcrops and exposed canyon walls, typically farther west than the project area.	No suitable habitat
Great Basin spadefoot	Breeds in seasonal streams and ponds in pinyon-juniper and semi-desert shrub habitats, generally west of the project area.	No suitable habitat
Northern leopard frog	Breeds in wet meadows and the shallows of marshes, ponds, lakes, reservoirs, streams, and irrigation ditches.	Possible in Beaver Creek
Colorado River cutthroat trout	Restricted to small headwaters streams isolated from introductions or colonization by non-native trouts.	Present in Beaver Creek
Flannelmouth sucker, bluehead sucker, and roundtail chub	Adult flannelmouth suckers and roundtail chubs generally restricted to rivers and major tributaries. Juveniles of all three and adult bluehead suckers found in smaller streams.	Present in Colorado River, Possible in Beaver Creek

Environmental Consequences

Proposed Action

Fringed Myotis (*Myotis thysanodes* and Townsend's Big-eared Bat (*Corynorhinus townsendii*) – No caves or other suitable roosting sites occur in the project area. Loss of large trees, potentially also used for roosting, would be negligible. No new loss of habitat above which the bats could search for aerial prey would occur, and the area they might avoid during nighttime drilling and completion activities would represent a small portion of their total feeding range, if present.

Northern Goshawk (*Accipiter gentilis*) – This species is mostly limited to spruce/fir or aspen forests, such as atop the Roan Plateau, Battlement Mesa, and other areas that reach subalpine elevations. However, goshawks may migrate to lower elevation pinyon/juniper or Douglas-fir habitats during winter and therefore could make occasional, transitory use of the project area for winter foraging. Goshawks feed primarily on small birds but also on diurnal small mammals (rabbits, chipmunks, etc.).

Brewer's Sparrow (*Spizella breweri*) – This project vicinity contains limited and marginal habitat for the Brewer's sparrow, which generally is restricted to extensive, uniform stands of sagebrush, primarily sagebrush steppe. If the species were to occur, oil and gas activities occurring with the home range of a nesting pair could cause individuals to shift their feeding patterns and to locate their nests to avoid the disturbance (noise, dust, human activity). However, this impact would be limited to the nesting season and would not be an issue for long-term production and maintenance operations.

Northern Leopard Frog (*Rana pipiens*) – The northern leopard frog is limited to perennial waters, including ponds and slow-flowing perennial streams or persistent portions of intermittent streams providing a combination of good water quality and abundant aquatic or shoreline vegetation. Suitable habitat occurs along some streams in the general vicinity of the project, including Beaver Creek. However, because the project is not located in the same subwatershed as Beaver Creek and does not involve habitat disturbance near water sources, direct impacts to this species are not expected.

Colorado River Cutthroat Trout (*Oncorhynchus clarki pleuriticus*) – Remaining populations of this subspecies of cutthroat trout occur mostly in headwater streams and lakes of the Colorado River drainage. This includes Beaver Creek, which is located generally east of the plan area and is within approximately 0.25 mile of the area in Section 36. The most recent sampling that took place in July 2007 by CRVFO fisheries personnel confirmed the occurrence of CRCT in Beaver Creek. The reach of stream that was sampled also found to support brown trout (*Salmo trutta*) at a ratio of 3:1 to this species.

Flannelmouth Sucker (*Catostomus latipinnis*), Bluehead Sucker (*C. discobolus*), and Roundtail Chub (*Gila robusta*) – Similar to the endangered Colorado River fishes described previously, these species are vulnerable to alterations in flow regimes in the Colorado River that affect the availability and suitability of spawning sites and habitats needed for development of the larvae. The amount of consumptive water use associated with the Proposed Action would not be expected to cause discernible impacts to flows in the Colorado River.

Also similar to the endangered big-river fishes, these BLM sensitive species are adapted to naturally high sediment loads and therefore would not be affected by increased sediment transport to the Colorado River. However, these species are vulnerable to inflow of sediments into smaller streams such as Beaver Creek due to smothering the eggs and impacts on food items. The potential for adverse impacts from inflow of chemical pollutants is also greater in small streams due less dilution and the presence of larval or juvenile fishes, which are more susceptible to mortality from acute toxicity. Prompt implementation of

the SPCC plan following any spill or other release of hydrocarbons, saline waters, or other contaminants into Beaver Creek would reduce the risk of significant adverse impacts to these species and other aquatic life, as well as the transport of these contaminants to the Colorado River.

No Action Alternative

Because the No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action, impacts to BLM sensitive animal species would be reduced. However, impacts to BLM sensitive species would occur due to the development of private wells on the pads, under the authority of the COGCC, and due to the use of CR317 to haul condensate and other chemicals in support of non-project-related oil and gas activities.

Vegetation

Affected Environment

The existing pads are located in a mature pinyon-juniper community with decadent Wyoming big sagebrush present in the openings. The area was apparently seeded in the past with crested wheatgrass (*Agropyron desertorum*), which is the dominant herbaceous species. Some native species are present such as bluegrass (*Poa* sp.) and squirreltail (*Elymus elymoides*). The reclaimed portions of the pads contain various seeded wheatgrasses and fourwing saltbush (*Atriplex confertifolia*).

Environmental Consequences

Proposed Action

Under the Proposed Action, 1.7 acres of new disturbance would occur on fee land from construction of a pipeline. The existing surface disturbance of both pads totals 15.2 acres on fee land. Following successful interim reclamation, the disturbance would be reduced to 4.0 acres. With implementation of standard COAs (Appendix A), desirable forbs and grasses on the unused portions of the pads and pipeline could be established within 2 to 3 years. However, because of periodic workovers and the potential for additional well bores in the future, it is likely that vegetation would remain in an early seral stage for the life of the wells.

No Action Alternative

Because the No Action alternative would result in the same amount of surface disturbance as the Proposed Action, impacts to vegetation would be similar.

Visual Resources

Affected Environment

The Proposed Action would take place on private land in the lower Beaver Creek area southwest of Rifle, Colorado. Since the Proposed Action occurs on private land, Federal lease terms regarding visual concerns are not applicable. Visual resource management objectives do not apply to non-BLM lands; visual values for those lands are only protected by landowner discretion.

Environmental Consequences

Proposed Action

The Proposed Action would result in no new surface disturbance with the exception of the installation of the ETC pipeline. Short-term visual impacts due to pipeline installation and to drilling and completion activities would occur within the project area. The existing landscape would be changed by the introduction of contrasting elements within the landscape in the form of new lines, colors, forms, and textures. There would be an increase in the presence of drilling rigs, heavy equipment (e.g., dozers, graders, etc.), and vehicular traffic with an associated increase in dust, light pollution, and well flaring.

The standard Best Management Practices (BMPs) related to reclamation, facility paint colors, and screening the pipeline alignment from view would mitigate the visual impacts of the project.

Existing surface disturbance is approximately 15 acres for both pads. The pipeline would be approximately 1.7 acres of new surface disturbance. After drilling and well completion work, the pads would be reshaped and seeded reducing the pad sizes to approximately 2 acres each.

No Action Alternative

Under the No Action Alternative, none of the components of the Proposed Action would be approved, and no new surface disturbance would occur. However, visual impacts associated with ongoing production activities and traffic related to existing wells on the GV15-36 pad would continue for the producing life of the wells. In addition, any new Fee wells and associated pad expansion under the authority of the COGCC would have impacts similar to those described for the Proposed Action.

Wastes, Hazardous or Solid

Affected Environment

The affected environment for hazardous materials includes air, water, soil, and biological resources that may potentially be affected by an accidental release of hazardous materials during transportation to and from the project area, storage, and use in construction and operations. Sensitive areas for hazardous materials releases include areas adjacent to water bodies, above aquifers, and areas where humans or wildlife would be directly impacted.

BLM Instruction Memoranda numbers WO-93-344 and CO-97-023 require that all National Environmental Policy Act documents list and describe any hazardous and/or extremely hazardous materials that would be produced, used, stored, transported, or disposed of as a result of a proposed project. The Glenwood Springs Resource Area, Oil & Gas Leasing & Development, Draft Supplemental Environmental Impact Statement (June 1998), Appendix L, Hazardous Substance Management Plan, contains a comprehensive list of materials that are commonly used for oil and gas projects. It also includes a description of the common industry practices for use of these materials and disposal of the waste products. These practices are dictated by various Federal and State laws and regulations, and the BLM standard lease terms and stipulations that would accompany any authorization resulting from this analysis. The most pertinent of the Federal laws dealing with hazardous materials contamination are as follows:

- The Oil Pollution Act (Public Law 101-380, August 18, 1990) prohibits discharge of pollutants into waters of the US, which by definition would include any tributary, including any dry wash that eventually connects with the Colorado River.
- The Comprehensive Environmental Response, Compensation, and Liability Act (Public Law 96-510 of 1980) provides for liability, compensation, cleanup, and emergency response for hazardous substances released into the environment. It also provides national, regional, and local contingency plans. Applicable emergency operations plans in place include the National Contingency Plan (40 CFR 300, required by section 105 of CERCLA), the Region VIII Regional Contingency Plan, the Colorado River Sub-Area Contingency Plan (these three are Environmental Protection Agency produced plans), the Mesa County Emergency Operations Plan (developed by the Mesa County Office of Emergency Management), and the BLM Grand Junction Field Office Hazardous Materials Contingency Plan.
- The Resource Conservation and Recovery Act (RCRA) (Public Law 94-580, October 21, 1976) regulates the use of hazardous substances and disposal of hazardous wastes. Note: While oil and gas lessees are exempt from RCRA, right-of-way holders are not. RCRA strictly regulates the management and disposal of hazardous wastes.

Emergency response to hazardous materials or petroleum products on BLM lands are handled through the BLM Grand Junction Field Office contingency plan. BLM would have access to regional resources if justified by the nature of an incident.

Environmental Consequences

Proposed Action

Possible pollutants that could be released during the construction phase of this project would include diesel fuel, hydraulic fluid, and lubricants. These materials would be used during construction of the pads, roads, and pipelines, and for refueling and maintaining equipment and vehicles. Potentially harmful substances used in the construction and operation phases would be kept onsite in limited quantities and trucked to and from the site as required. No hazardous substance, as defined by 40 CFR 355 would be used, produced, stored, transported, or disposed of in amounts above threshold quantities.

Waste generated by construction activities would not be exempt from hazardous waste regulations under the oil and gas exploration and production exemption of RCRA. Exempt wastes would include those associated with well production and transmission of natural gas through the gathering lines and the natural gas itself.

With the exception of produced hydrocarbons, ethylene glycol (antifreeze), lubricants, and amine compounds, chemicals subject to reporting under Title III of the Superfund Amendments and Reauthorization Act in quantities of 10,000 pounds or more would not be used, produced, stored, transported, or disposed of during construction or operation of the facilities. None of the chemicals that would be used in construction meet the criteria for an acutely hazardous material/substance, or meet the quantities criteria per BLM Instruction Memorandum No. 93-344. In addition, no extremely hazardous substance, as defined in 40 CFR 355, in amounts above threshold planning quantities would be produced, used, stored, transported, or disposed of during construction or operation of the facilities.

Solid waste (human waste, garbage, etc.) would be generated during construction activities and, to a limited extent, during project operations. These would be removed to a landfill or water treatment facility as needed, and all would be removed prior to interim reclamation.

Surface water or groundwater could be impacted under the Proposed Action. Pollutants that might be released during the operational phase of the project could include condensate, produced water (if the wells in the area produce water) and glycol (carried to the site and used as antifreeze). While uncommon, an accident could occur that could result in a release of any of these materials. A release could result in contamination of surface water or soil. Improper casing and cementing procedures could result in the contamination of groundwater resources. In the case of any release, emergency or otherwise, the responsible party would be liable for cleanup and any damages. Depending on the scope of the accident, any of the above referenced contingency plans would be activated to provide emergency response. At a minimum, the BLM Grand Junction Field Office contingency plan would apply.

These laws, regulations, standard lease stipulations, and contingency plans and emergency response resources are expected to adequately mitigate any potential hazardous or solid waste issues associated with the Proposed Action.

No Action Alternative

Under this alternative, no new Federal wells would be drilled. The potential waste impacts related to drilling, completing, servicing and producing the 16 Federal wells would not occur, resulting in less traffic compared to the Proposed Action.

Water Quality, Surface and Ground

Surface Water

Affected Environment

The proposed activities for GV15-36 and RWF33-36 would occur within Colorado River below Rifle Creek 6th code watershed unit which empties directly into the Colorado River approximately 2 miles north of the project. According to the *Stream Classifications and Water Quality Standards* (CDPHE, Water Quality Control Commission [WQCC] Regulation No. 37) (CDPHE 2007), unnamed ephemeral drainages that drain most of the project vicinity are within segment 4a, which includes tributaries to the Colorado River from its confluence with the Roaring Fork River to a point immediately below its confluence with Parachute Creek. Following is a brief description of segment 4a.

- Segment 4a – This segment has been classified aquatic life cold 2, recreation N, water supply, and agriculture. Aquatic life cold 2 indicates that this water course is not capable of sustaining a wide variety of cold or warm water biota due to habitat, flows, or uncorrectable water quality conditions. Recreation class N refers to waters that are not suitable or intended to become suitable for primary contact recreation. This segment is suitable or intended to become suitable for potable water supplies and agricultural purposes that include irrigation and livestock use.

All streams within segment 4a are on the State of Colorado's *303(d) List of Impaired Waters and Monitoring and Evaluation List* (CDPHE, WQCC Regulation No. 93) (CDPHE 2010) for naturally high levels of selenium. *Colorado's Monitoring and Evaluation List* identifies water bodies where there is reason to suspect water quality problems, but uncertainty also exists regarding one or more factors. The

tributaries to the Lower Colorado River which include the project area are on the State of Colorado's *Monitoring and Evaluation List* for sediment load

Additionally, the project area is just downstream of the Rifle drinking water intake on Beaver creek. Although the project location lies within a quarter mile of the intake, the area drains to the northwest, away from Beaver Creek. Therefore neither the pads nor the pipeline are inside the Rifle Municipal Watershed Boundary.

The USGS has collected surface water flow and quality data from the Colorado River below the project area near Rulison in 1977 and 1978 (Table 7).

Parameter	Colorado River below Rulison CO, USGS Site #09092570 01/18/1978	Colorado River below Rulison CO, USGS Site #09092570 4/8/1977
Instantaneous discharge (cfs)	1500	1560
Temperature, water (°C)	2.5	11
Field pH (standard units)	7.9	8.1
Specific conductance (µS/cm/cm at 25°C)	1320	1200
Total Dissolved Solids (mg/L)	756	733
Hardness as CaCO ₃ (mg/L)	280	250
Chloride (mg/L)	230	230
Selenium (µg/L)	2	1
Dissolved oxygen (mg/L)	11.2	10
Note: NA = data not available		Source: USGS 2007.

No sediment measuring stations are present on the Colorado River or its tributaries near the pad location. The closest downstream station on the Colorado River is near DeBeque, Colorado. A summary of USGS data collected at this station indicates that the mean sediment load was 1,817 tons per day during the period of 1974 to 1976. The maximum and minimum for this location during the same period was 41,300 and 8 tons/day respectively (USGS 2007).

Environmental Consequences

Proposed Action

The Proposed Action would result in 1.7 acres of new surface related to buried pipeline installations. Potential impacts to surface water associated with the Proposed Action occur from surface-disturbing activities, traffic, waste management, and the use, storage and transportation of fluids (i.e., chemicals, condensate, and produced water). Surface-disturbing activities associated with well and facility pads, roads, and pipelines cause loss of vegetation cover, soil compaction and displacement, increased volume and velocity of runoff, and increased sedimentation and salinity in surface waters. Initially impacts can be minimized by stormwater management, stockpiling topsoil, controlling erosion, rehabilitation of disturbed surfaces quickly. Long term soil protection could be achieved by continued road and pad maintenance to reduce erosion, remediation of contaminated soils and minimizing the size of the long-term pad footprint through interim reclamation measures. As proposed, these measures would include limiting cut slope

steepness, step-cutting, crowning road surfaces, installing culverts and drainage systems, and applying gravel to all upgraded BLM roads in the project area to a compacted thickness of 6 inches (Appendix A).

Oil and gas waste management practices have the potential to contaminate soils and surface water. Contamination of soils could cause long-term reduction in site productivity resulting in increased erosion and potential sediment and contaminant delivery to nearby waterways during runoff. Use, storage, and transportation of fluids such as produced water, hydraulic fracturing fluids, and condensate have the possibility of spills that could migrate to surface or groundwater. Additionally, tanks used to store produced water and condensate would be placed in secondary containment to prevent offsite release. Other elements of the Proposed Action are designed to mitigate risks to surface waters associated with the release of drilling fluids, produced water, and condensate. A closed-loop drilling system would be implemented which recycles drilling fluids; cuttings would be dried through the use of a shaker system and be stacked against the cutslope on the pad. A traditional reserve pit would not be constructed.

In the event of an accidental release, produced water and condensate would be confined for cleanup in a containment area and would not migrate to surrounding soils or surface waters. Pipelines associated with the transport of these liquids would be pressure tested to detect leakage prior to use. Cuttings management areas must be decontaminated to COGCC standards prior to pit closure. Implementation of the standard COAs for mitigating impacts to surface waters (Appendix A) would minimize risks of adverse impacts associated with construction and ongoing production activities.

No Action Alternative

The No Action Alternative would constitute denial of the Federal wells as proposed. However, any private wells drilled under the authority of the COGCC would result in the same potential for impacts to surface waters as described above for the Proposed Action, and the potential for impacts associated with haul traffic on CR317 would continue.

Waters of the U.S.

Affected Environment

Waters of the U.S. located in the project vicinity include Beaver Creek and the mainstem and tributaries of the Colorado River. Section 404 of the Clean Water Act requires a Department of the Army permit from the U.S. Army Corps of Engineers (USACE) prior to discharging dredged or fill material into waters of the U.S. as defined by 33 CFR Part 328.

Environmental Consequences

Proposed Action

No new crossings of waters of the U.S. are included in the Proposed Action, nor is pad expansion proposed that could discharge fill into Waters of the U.S.

Improperly designed crossings of small ephemeral drainages, in particular any undersized or poorly aligned culverts, could result in soil degradation, including erosion at culvert outlets. This could potentially supply sediment to the Colorado River approximately 2 miles to the south. However, standard and site-specific surface-use COAs listed in Appendix A would be implemented to protect Beaver Creek the Colorado River, and any other waters of the U.S. potentially impacted by long-distance stormflow transport.

No Action Alternative

The No Action Alternative would constitute denial of the Federal wells as proposed. However, any private wells drilled under the authority of the COGCC would result in the same potential for impacts to surface waters as described above for the Proposed Action, and the potential for impacts associated with haul traffic on CR317 would continue.

Groundwater

Affected Environment

The Lower Piceance Basin contains both alluvial and bedrock aquifers (Colorado Geological Survey 2003). Unconsolidated alluvial aquifers are the most productive aquifers in the region (EPA 2004) and are defined as narrow, thin deposits of sand and gravel formed primarily along stream courses, in this case, along the Colorado River and its tributaries. Alluvial well depths are generally less than 200 feet and water levels typically range between 100 to 150 feet. Well yield is dependent upon the intended use of the well, well construction design, sediment type and saturated thickness. Domestic use wells are limited to 15 gallons per minute (gpm) administratively, while municipal wells are designed and constructed for maximum potential yield.

The principal bedrock aquifers of the Piceance Basin are the Uinta Formation and the Parachute Creek Member of the Green River Formation, are defined as the upper and lower Piceance Basin aquifer systems. The Uinta Formation consists of discontinuous layers of sandstone, siltstone, and marlstone and is less permeable than the hydrologically connected upper Parachute Creek Member (Robson and Saulnier 1981). The upper most Uinta Formation also contains a shallow, perched aquifer that is separate from the upper aquifer unit (Cole et al. 1995). The upper Piceance Basin aquifer is underlain by the Mahogany confining unit, and correlates with the Mahogany Zone, the principal oil shale unit of the Piceance Basin. The Mahogany Zone separates the upper aquifer from the lower. The lower aquifer consists of the fractured marlstone of the lower part of the Parachute Creek Member. The thickness of the upper and lower aquifer units average 700 and 900 feet, respectively (CGS 2003). Both the upper and lower aquifer systems are found within the surrounding cliffs of the project area, but no water wells are completed within either the upper or lower bedrock aquifers units as described above. Beneath these two aquifer systems is a confining unit which consists of the lower two members of the Green River Formation, and the Wasatch Formation. Although considered a confining unit, some fresh water wells are completed in the discontinuous water bearing sands of the Wasatch Formation, but these water bearing intervals are considered to be localized.

Below the Wasatch Formation is the Cretaceous aged Mesaverde aquifer. The depth to the top of this aquifer beneath the project area is more than 5,000 feet below ground surface (bgs), far too deep for economic development. The Mesaverde aquifer is of regional importance, but does not provide recharge into the fresh water system within the shallower groundwater system of the project area.

Water quality of the upper Piceance Basin aquifer unit is relatively good, ranging in Total Dissolved Solid (TDS) levels from 500 to 1,000 milligrams per liter (mg/L). In the lower unit, TDS concentrations increase from 1,000 to 10,000 mg/L along basin flow paths. Waters with TDS values in excess of 1,000 mg/L are generally unsuitable for potable supply. Water suitable for drinking has a Federal secondary standard set at 500 mg/L or less (EPA 2006). The quality of the water in the Mesaverde aquifer is highly variable, with concentrations of dissolved solids ranging from less than 1,000 milligrams per liter in many of the basin-margin areas to more than 10,000 milligrams per liter in the central part of the Piceance Basin (EPA 2004). In general, areas of the aquifer that are recharged by infiltration from precipitation or

surface water sources contain relatively fresh water. However, water quality in the Piceance Basin is generally poor overall due to the presence of nahcolite deposits and salt beds found throughout the basin. Only very shallow waters such as those from the surficial Wasatch Formation are used for drinking water (Graham 2001, cited in EPA 2004).

Five permitted domestic water wells are located within a 0.5-mile radius of the proposed project area. The completion statuses of two of the permits are unknown, another has been canceled and the remaining two have no data pertaining to depths or discharge rates. The closest well with completion information is approximately 4,800 east of the project area. It is listed as having a depth of 147 feet, a static water level of 80 feet bgs, and a discharge rate of 8 gpm.

Environmental Consequences

Proposed Action

Potential impacts to groundwater resources from the proposed development would include contamination of the groundwater with produced water, drilling mud, and petroleum constituents. Hydraulic fracturing (fracing) would be incorporated to create additional pathways to facilitate gas production. Agents called “proppants” used to prop open the fractures are mixed with both fresh water and produced water. Typical proppants include sand, aluminum, glass, or plastic beads, with less than 1% of other compounds such as corrosion-, friction-, and scale-inhibitors (EnerMax Inc. 2007). Fracing techniques are used to create secondary porosity fractures, held open by proppants, allowing the otherwise trapped gas to migrate up the borehole for production. Hydrofracturing would be conducted at 5,000 feet or more below ground surface (bgs). Drilling scenarios are developed to prevent fluids and produced hydrocarbons from migrating upward into fresh water zones. Geologic and engineering reviews are conducted to ensure that the cementing and casing programs are adequate to protect all downhole resources. The use of construction practices, drilling practices, and BMPs required by the BLM (see Downhole COAs in Appendix A) is expected to result in no significant adverse impact to groundwater aquifers.

No Action Alternative

Under the No Action Alternative, the proposed Federal wells would not be approved and drilled. As a result, only the private wells would have the potential to impact groundwater resources. Because the COGCC has drilling and completion requirements similar to those of the BLM, no adverse impacts on aquifers are expected to result from development of the private wells under the No Action Alternative.

Wildlife, Aquatic

Affected Environment

Beaver Creek, a perennial stream and tributary of the Colorado River, is located approximately 0.25 mile east of the RWF33-36 well pad. Fish surveys conducted by CDOW and BLM have documented the presence in portions of Beaver Creek of the Colorado River cutthroat trout, a native trout listed as sensitive by the BLM and discussed in the section on Special Status Species.

A non-native sportfish, the brown trout (*Salmo trutta*), occupies lower reaches of Beaver Creek. This trout of eastern North America has been widely introduced in mountainous areas of Colorado because of its tolerance for slightly warmer waters than the cutthroat trout and its ability to reproduce successfully in streams with small flows.

Aquatic macroinvertebrates living in perennial streams such as Beaver Creek during a portion of their lifecycles include larvae of stoneflies, mayflies, and some caddisflies in fast-flowing reaches with rocky or detrital substrates. Both the aquatic larvae and winged adults of these insects are the primary prey for trout in Beaver Creek. Terrestrial invertebrates that land or fall onto the water surface or are carried into the stream in runoff from adjacent uplands provide a secondary prey base. Slow-flowing portions of Beaver Creek with fine substrates, aquatic macroinvertebrates are likely to support the larvae of midges, mosquitoes, and some caddisflies. These species are able to tolerate relatively warm, turbid, and poorly oxygenated waters.

Environmental Consequences

Proposed Action

Habitat for the present fish population of Beaver Creek would not be affected by the project due to lack of surface disturbance in areas that drain to this stream. The existing access road across Beaver Creek has been completed and is sized sufficiently for project-related traffic. Runoff from the well pads does not drain into Beaver Creek but flows into ephemeral drainages on the mesa where the pads are located and from there to the north. Stormwater runoff from the access road drains into well vegetated borrow pits near Beaver Creek. Aerial deposition of airborne dust resulting from truck traffic on adjacent CR317 is possible, but increases would be minor in comparison to existing traffic volumes. Dust abatement requirements on the road, which apply to oil and gas operators, would reduce fugitive dust, as would the well-developed riparian tall shrubs along the creek in the project vicinity.

As mentioned in the sections on Riparian and Wetland Areas and Special Status Species, some potential exists from accidental spills or releases of toxic pollutants into Beaver Creek as a result of an accident involving a haul truck or leakage from a pipeline. Requirements for prompt implementation of the operator's SPCC plan would minimize the risk of significant impacts on aquatic life on Beaver Creek or the Colorado River from these potential occurrences.

No Action Alternative

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action therefore impacts to Aquatic Wildlife Species would be slightly less. However, private wells would be developed under the authority of the COGCC, and the road adjacent to Beaver Creek would continue to receive heavy use for non-project traffic. Therefore, impacts under this alternative would be reduced only slight compared to the Proposed Action.

Wildlife, Terrestrial

Affected Environment

Mammals

The site is located within winter range and the winter concentration area for mule deer (*Odocoileus hemionus*) and American elk (*Cervus elaphus*) as mapped by CDOW (2010). Winter range is that part of the overall range of a species where 90% of the individuals are located during the average five winters out of ten from the first heavy snowfall to spring green-up, or during a site-specific period of winter as defined for each data analysis unit (DAU) (CDOW 2011). Winter Concentration areas are that part of the winter range where densities are at least 200% greater than the surrounding winter range density during the same period used to define winter range in the average five winters out of ten (CDOW 2011).

Large carnivores present in the project vicinity include the mountain lion (*Puma concolor*) and black bear (*Ursus americanus*). Mountain lions move seasonally to generally follow migrations of their preferred prey, mule deer. Two medium-sized carnivores, the coyote (*Canis latrans*) and bobcat (*Lynx rufus*), are also present throughout the region in open habitats and broken or wooded terrain, respectively, where they hunt for small mammals, reptiles, and ground-dwelling birds. Smaller carnivores in habitats similar to those near the project site include the ringtail (*Bassariscus astutus*) and spotted skunk (*Spilogale gracilis*).

Small mammals present within the planning area include rodents such as the rock squirrel (*Spermophilus variegatus*), golden-mantled ground squirrels (*Spermophilus lateralis*), least chipmunk (*Tamias minimus*), and packrat (bushy-tailed woodrat) (*Neotoma cinerea*), as well as the mountain cottontail (*Sylvilagus nuttallii*). Rodents and, to a lesser extent rabbits, are the primary prey base for a variety of avian and mammalian predators.

Birds

The wild turkey (*Meleagris gallopavo*) is native to North America and is the largest upland gamebird in the U.S. Wild turkeys are omnivorous, foraging on the ground or climbing shrubs and small trees to feed. They prefer eating hard mast such as acorns, nuts, and various trees, including pinyon pine as well as various seeds, berries such as juniper and bearberry, roots and insects. Wild turkeys often feed in cow pastures and are also known to eat a wide variety of grasses. This site is located within areas mapped by the CDOW as turkey winter range, winter concentration areas, and production areas. Production areas are used for nesting during the period from March 15 to August 15. See the sections on Migratory Birds and Special Status Species for discussions of other birds in the area.

Reptiles and Amphibians

Species most likely to occur include the western fence lizard (*Sceloporus undulatus*) and gopher snake (bullsnake) (*Pituophis catenifer*) in xeric shrublands or grassy clearings and the western terrestrial garter snake (*Thamnophis elegans*) along creeks. Other reptiles potentially present along creeks, although more commonly found at lower elevations than the site, are the milk snake (*Lampropeltis triangulum*) and smooth green snake (*Opheodrys vernalis*).

Although the project area does not contain any suitable habitat, the surrounding area provides potentially suitable habitat for the northern leopard frog (see the section on Special Status Species) and two additional amphibians, the Woodhouse's toad (*Bufo woodhousii*), and western chorus frog (*Pseudacris triseriata*). Within the CRVFO and vicinity, the spadefoot toad and Woodhouse's toad occur primarily along ephemeral washes that do not support fish and contain pools of water for a period of at least a few weeks every spring. The chorus frog occurs primarily in cattail and bulrush wetlands and along the vegetated margins of seasonal or perennial ponds and slow-flowing streams. Some existing stock ponds and slow-flowing portions of the drainages are potentially suitable for the northern leopard frog, though none have been documented.

Environmental Consequences

Proposed Action

Under the Proposed Action, 1.7 acres of new disturbance would occur on fee land from construction of a pipeline. The existing surface disturbance of both pads totals 15.2 acres on fee land. Following partial reclamation of new well pads and roads, long-term forage disturbance would be reduced to approximately

4 acres for the Proposed Action. In areas where shrubs and trees would be disturbed, impacts to wildlife from loss of thermal and/or hiding cover would be long-term, lasting the 20 to 30+ years following reclamation that it would take for these woody species to re-establish. Surface disturbing activities within these habitats during the winter and during migratory seasons have the potential to displace mule deer and elk from these important habitats.

Construction activities, soil disturbance, and traffic could potentially spur the introduction and spread of weed species within the project area. Weed invasion and establishment has become an increasingly important concern associated with surface disturbing activities in the West. Weeds often outcompete native plant species, rendering an area less productive as a source of forage for wildlife. However, implementation of the suggested mitigation measures in the Invasive, Non-Native Weeds section of this EA would minimize the potential for invasion and establishment of the project area by undesirable plants.

Indirect impacts on wildlife, especially big game and raptors, would include disturbance caused by increased human activity, equipment operation, vehicle traffic, harassment by dogs brought to the site by contractors, and noise related to construction, drilling, and completion activities. Most species of wildlife are relatively secretive and distance themselves from these types of disturbance or move to different areas screened by vegetation screening or topographic features. This avoidance, referred to as displacement, results in underuse of habitat near the disturbance. Avoidance of forage and cover resources adjacent to disturbance reduces habitat utility and the capacity of the affected acreage to support wildlife populations (BLM 1999a).

No Action Alternative

The No Action Alternative constitutes denial of the Federal APDs described in the Proposed Action and any of the associated upgrades to the pad, road, and pipeline. However, because the Proposed Action does not include substantial new surface disturbance, the No Action alternative would not differ in this regard. Impacts from the operation of equipment and from truck traffic would be reduced, but only slightly in comparison to existing oil and gas activities in the general area.

SUMMARY OF CUMULATIVE IMPACTS

Until relatively recently, modifications of the region have been characteristic of agricultural and ranching lands, with localized industrial impacts associated with the railroad and I-70 corridors. More recently, these changes are cumulative to the growth of residential and commercial uses, utility corridors, oil and gas developments, and other rural industrial uses. These increasing activity levels have accelerated the accumulation of impacts in the area. Cumulative impacts have included: (1) direct habitat losses; (2) habitat fragmentation and losses in habitat effectiveness; (3) elevated potential for runoff, erosion, and sedimentation; (4) expansion of noxious weeds and other invasive species; and (5) increased noise and traffic and reductions in the scenic quality of the area (BLM 1999a: 4-1 to 4-68).

Although none of the cumulative impacts described in the 1999 FSEIS was characterized as significant, and while new technologies and regulatory requirements have reduced the impacts of some land uses, it is nonetheless clear that past, present, and reasonably foreseeable future actions has had and would continue to have adverse affects on various elements of the human environment. The anticipated impact levels for existing and future actions range from negligible to locally major, and primarily negative, for specific resources. The primary reasons for this assessment are twofold: (1) the rate of development, particularly oil and gas development, has until recently been increasing in the area, resulting in an accelerated accumulation of individually nominal effects; and (2) residential and commercial expansion, as well as

most of the oil and gas development, has occurred private holdings lands where mitigation measures designed to protect and conserve resources are not in effect.

It is clear that the Proposed Action would contribute to the collective adverse impact for some resources. Although the contribution would be very minor, the Proposed Action would contribute incrementally to the collective impact to air quality, vegetation, migratory birds, terrestrial wildlife, and other resources.

PERSONS AND AGENCIES CONSULTED

Williams Production RMT Company: April Mestas, Dan Collette, Joe Weaver, Jr., and Kris Meil.

INTERDISCIPLINARY REVIEW

BLM staff from the CRVFO who participated in the preparation of this EA—including review of survey results submitted by the operator’s consultants, evaluation of impacts likely to occur from implementation of the Proposed Action, and identification of appropriate COAs to be attached and enforced by BLM—are listed in Table 8.

Table 8. BLM Interdisciplinary Team Authors and Reviewers		
<i>Name</i>	<i>Title</i>	<i>Areas of Participation</i>
Beth Brenneman	Ecologist	Invasive Non-native Species, Special-status Species (Plants), Vegetation
John Brogan	Archaeologist	Cultural Resources, Native American Religious Concerns
Jim Byers	Natural Resource Specialist	EA Project Lead, Access & Transportation, Socio-Economics
Allen Crockett, Ph.D.	Supervisory Natural Resource Specialist	NEPA Review
William Howell	Petroleum Engineer	Downhole COAs
Shauna Kocman, Ph.D.	Hydrologist	Air Quality, Noise, Soils, Surface Water, Waters of the U.S.
Julie McGrew	Natural Resource Specialist	Visual Resources
Sylvia Ringer	Wildlife Biologist	Migratory Birds, Special-status Species (Animals), Wildlife, Aquatic and Terrestrial
Todd Sieber	Geologist	Geology and Minerals, Groundwater, Paleontology

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APPENDIX A

Surface Use and Downhole Conditions of Approval

GV15-36 pad & RWF33-35 pad

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SURFACE USE CONDITIONS OF APPROVAL

DOI-BLM-CO-N040-2011-0085 EA

1. Administrative Notification. The operator shall notify the BLM representative at least 48 hours prior to initiation of construction. If requested by the BLM representative, the operator shall schedule a pre-construction meeting, including key operator and contractor personnel, to ensure that any unresolved issues are fully addressed prior to initiation of surface-disturbing activities or placement of production facilities.
2. Road Maintenance. Roads shall be crowned, ditched, surfaced, drained with culverts and/or water dips, and constructed to BLM Gold Book standards (*Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development, The Gold Book, Fourth Edition—Revised 2007, BLM/WO/ST-06/021+3071/REV 07*).

Initial gravel application shall be a minimum of 6 inches. The operator shall provide timely year-round road maintenance and cleanup on the access roads. A regular schedule for maintenance shall include, but not be limited to, blading, ditch and culvert cleaning, road surface replacement, and dust abatement. When rutting within the traveled way becomes greater than 6 inches, blading and/or gravelling shall be conducted as approved by the BLM. 3. Drill Cuttings Management. The drill cuttings shall be placed in an excavated trench on the pad or stacked against the cutslope on the pad surface. The cuttings shall be remediated per COGCC regulations (Table 910-1 standards) prior to trench closure and/or earthwork reshaping related to well pad interim reclamation.

4. Dust Abatement. The operator shall implement dust abatement measures as needed to prevent fugitive dust from vehicular traffic, equipment operations, or wind events. The BLM may direct the operator to change the level and type of treatment (watering or application of various dust agents, surfactants, and road surfacing material) if dust abatement measures are observed to be insufficient to prevent fugitive dust.
5. Drainage Crossings and Culverts. Construction activities at perennial, intermittent, and ephemeral drainage crossings (e.g. burying pipelines, installing culverts) shall be timed to avoid high flow conditions. Construction that disturbs any flowing stream shall utilize either a piped stream diversion or a cofferdam and pump to divert flow around the disturbed area.

Culverts at drainage crossings shall be designed and installed to pass a 25-year or greater storm event. On perennial and intermittent streams, culverts shall be designed to allow for passage of aquatic biota. The minimum culvert diameter in any installation for a drainage crossing or road drainage shall be 24 inches. Crossings of drainages deemed to be jurisdictional waters of the U.S. pursuant to Section 404 of the Clean Water Act may require additional culvert design capacity. Due to the flashy nature of area drainages and anticipated culvert maintenance, the U.S. Army Corps of Engineers (USACE) recommends designing drainage crossings for the 100-year event. Contact the USACE Western Colorado Regulatory Branch at 970-243-1199.

Pipelines installed beneath stream crossings shall be buried at a minimum depth of 4 feet below the channel substrate to avoid exposure by channel scour and degradation. Following burial, the channel grade and substrate composition shall be returned to pre-construction conditions.

6. Jurisdictional Waters of the U.S. The operator shall obtain appropriate permits from the U.S. Army Corps of Engineers (USACE) prior to discharging fill material into waters of the U.S. in

accordance with Section 404 of the Clean Water Act. Waters of the U.S. are defined in 33 CFR Section 328.3 and may include wetlands as well as perennial, intermittent, and ephemeral streams. Permanent impacts to waters of the U.S. may require mitigation. Contact the USACE Western Colorado Regulatory Branch at 970-243-1199. Copies of any printed or emailed approved USACE permits or verification letters shall be forwarded to the BLM.

7. Reclamation. The goals, objectives, timelines, measures, and monitoring methods for final reclamation of oil and gas disturbances are described in Appendix I (Surface Reclamation) of the 1998 Draft Supplemental EIS (DSEIS). Specific measures to follow during interim and temporary (pre-interim) reclamation are described below.
 - a. Reclamation Plans. In areas that have low reclamation potential or are especially challenging to restore, reclamation plans will be required prior to APD approval. The plan shall contain the following components: detailed reclamation plans, which include contours and indicate irregular rather than smooth contours as appropriate for visual and ecological benefit; timeline for drilling completion, interim reclamation earthwork, and seeding; soil test results and/or a soil profile description; amendments to be used; soil treatment techniques such as roughening, pocking, and terracing; erosion control techniques such as hydromulch, blankets/matting, and wattles; and visual mitigations if in a sensitive VRM area.
 - b. Deadline for Interim Reclamation Earthwork and Seeding. Interim reclamation to reduce a well pad to the maximum size needed for production, including earthwork and seeding of the interim reclaimed areas, shall be completed within 6 months following completion of the last well planned for the pad. Reclamation, including seeding, of temporarily disturbed areas along roads, pipelines, and topsoil piles and berms, shall be completed within 30 days following completion of construction.

If requested by the project lead NRS for a specific pad or group of pads, the operator shall contact the NRS by telephone or email approximately 72 hours before reclamation and reseeding begin. This will allow the NRS to schedule a pre-reclamation field visit if needed to ensure that all parties are in agreement and provide time for adjustments to the plan before work is initiated.

The deadlines for seeding described above are subject to extension upon approval of the BLM based on season, timing limitations, or other constraints on a case-by-case basis. If the BLM approves an extension for seeding, the operator may be required to stabilize the reclaimed surfaces using hydromulch, erosion matting, or other method until seeding is implemented.

- c. Topsoil Stripping, Storage, and Replacement. All topsoil shall be stripped following removal of vegetation during construction of well pads, pipelines, roads, or other surface facilities. In areas of thin soil, a minimum of the upper 6 inches of surficial material shall be stripped. The BLM may specify a stripping depth during the onsite visit or based on subsequent information regarding soil thickness and suitability. The stripped topsoil shall be stored separately from subsoil or other excavated material and replaced prior to final seedbed preparation. The BLM best management practice (BMP) for the Windrowing of Topsoil (COA #18) shall be implemented for well pad construction whenever topography allows.
 - d. Seedbed Preparation. For cut-and-fill slopes, initial seedbed preparation shall consist of backfilling and recontouring to achieve the configuration specified in the reclamation plan.

For compacted areas, initial seedbed preparation shall include ripping to a minimum depth of 18 inches, with a maximum furrow spacing of 2 feet. Where practicable, ripping shall be conducted in two passes at perpendicular directions. Following final contouring, the backfilled or ripped surfaces shall be covered evenly with topsoil.

Final seedbed preparation shall consist of scarifying (raking or harrowing) the spread topsoil prior to seeding. If more than one season has elapsed between final seedbed preparation and seeding, and if the area is to be broadcast-seeded or hydroseeded, this step shall be repeated no more than 1 day prior to seeding to break up any crust that has formed.

Seedbed preparation is not required for topsoil storage piles or other areas of temporary seeding.

Requests for use of soil amendments, including basic product information, shall be submitted to the BLM for approval.

- e. Seed Mixes. A seed mix consistent with BLM standards in terms of species and seeding rate for the specific habitat type shall be used on all BLM lands affected by the project (see Attachments 1 and 2 of the letter provided to operators dated May 1, 2008). Note that temporary seeding no longer allows the use of sterile hybrid non-native species.

For private surfaces, the menu-based seed mixes are recommended, but the surface landowner has ultimate authority over the seed mix to be used in reclamation. The seed shall contain no noxious, prohibited, or restricted weed seeds and shall contain no more than 0.5% by weight of other weed seeds. Seed may contain up to 2.0% of “other crop” seed by weight, including the seed of other agronomic crops and native plants; however, a lower percentage of other crop seed is recommended. Seed tags or other official documentation shall be submitted to BLM at least 14 days before the date of proposed seeding for acceptance. Seed that does not meet the above criteria shall not be applied to public lands.

- f. Seeding Procedures. Seeding shall be conducted no more than 24 hours following completion of final seedbed preparation.

Where practicable, seed shall be installed by drill-seeding to a depth of 0.25 to 0.5 inch. Where drill-seeding is impracticable, seed may be installed by broadcast-seeding at twice the drill-seeding rate, followed by raking or harrowing to provide 0.25 to 0.5 inch of soil cover or by hydroseeding and hydromulching. Hydroseeding and hydromulching shall be conducted in two separate applications to ensure adequate contact of seeds with the soil.

If interim revegetation is unsuccessful, the operator shall implement subsequent reseeding until interim reclamation standards are met.

- g. Mulch. Mulch shall be applied within 24 hours following completion of seeding. Mulch may consist of either hydromulch or of certified weed-free straw or certified weed-free native grass hay crimped into the soil.

NOTE: Mulch is not required in areas where erosion potential mandates use of a biodegradable erosion-control blanket (straw matting).

following: (a) the nest is in a severely dilapidated condition or has been destroyed due to natural causes, (b) the nest is not occupied during the normal nesting period for that species, (c) the nest was occupied but subsequently failed due to natural causes, or (d) the nest was occupied, but the nestlings have fledged and dispersed from the nest. If project-related activities are initiated when either of these nests is active, even if outside the 60-day TL period, the operator remains responsible for compliance with the MBTA with respect to a “take” of migratory bird species (see following COA).

11. Migratory Birds. It shall be the responsibility of the operator to comply with the Migratory Bird Treaty Act (MBTA) with respect to “take” of migratory bird species. Under the MBTA, “take” means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The operator shall prevent use by migratory birds of any pit containing fluids associated with oil or gas operations, including but not limited to reserve pits, produced water pits, frac-water pits, cuttings trenches (if covered by water/fluid), and evaporation pits. Fluids in these pits may pose a risk to migratory birds (e.g., waterfowl, shorebirds, wading birds, songbirds, and raptors) as a result of ingestion, absorption through the skin, or interference with buoyancy and temperature regulation. Regardless of the method used, it shall be in place within 24 hours following the placement of fluids into a pit. Because of high toxicity to birds, oil slicks and oil sheens should immediately be skimmed off the surface of any pit that is not netted. The most effective way to eliminate risk to migratory birds is prompt drainage, closure, and reclamation of pits, which is strongly encouraged. All mortality or injury to species protected by the MBTA shall be reported immediately to the BLM project lead and to the USFWS representative in the BLM Field Office at 970-876-9051 and visit <http://www.fws.gov/mountain-prairie/contaminants/oilpits.htm>.
12. Birds of Conservation Concern. Pursuant to BLM Instruction Memorandum 2008-050, all surface-disturbing activities are prohibited from **May 1 to June 30** to reduce impacts to Birds of Conservation Concern (BCC). An exception to this COA will be granted if nesting surveys conducted no more than one week prior to surface-disturbing activities indicate that no BCC species are nesting or otherwise present within 10 meters of the area to be disturbed. Nesting surveys shall include an aural survey for diagnostic vocalizations in conjunction with a visual survey for adults and nests. Surveys shall be conducted by a qualified breeding bird surveyor between sunrise and 10:00 AM under favorable conditions for detecting and identifying a BCC species. This provision does not apply to ongoing construction, drilling, or completion activities that are initiated prior to May 15 and continue into the 60-day period at the same location.
13. Range Management. Range improvements (fences, gates, reservoirs, pipelines, etc) shall be avoided during development of natural gas resources to the maximum extent possible. If range improvements are damaged during exploration and development, the operator will be responsible for repairing or replacing the damaged range improvements. If a new or improved access road bisects an existing livestock fence, steel frame gate(s) or a cattleguard with associated bypass gate shall be installed across the roadway to control grazing livestock.
14. Paleontological Resources. All persons associated with operations under this authorization shall be informed that any objects or sites of paleontological or scientific value, such as vertebrate or scientifically important invertebrate fossils, shall not be damaged, destroyed, removed, moved, or disturbed. If in connection with operations under this authorization any of the above resources are encountered the operator shall immediately suspend all activities in the immediate vicinity of the discovery that might further disturb such materials and notify the BLM of the findings. The discovery must be protected until notified to proceed by the BLM.

Where feasible, the operator shall suspend ground-disturbing activities at the discovery site and immediately notify the BLM of any finds. The BLM will, as soon as feasible, have a BLM-permitted paleontologist check out the find and record and collect it if warranted. If ground-disturbing activities cannot be immediately suspended, the operator shall work around or set the discovery aside in a safe place to be accessed by the BLM-permitted paleontologist.

15. Cultural Education/Discovery. All persons in the area who are associated with this project shall be informed that if anyone is found disturbing historic, archaeological, or scientific resources, including collecting artifacts, the person or persons will be subject to prosecution.

Pursuant to 43 CFR 10.4(g), the BLM shall be notified by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4 (c) and (d), activities shall stop in the vicinity of the discovery, and the discovery shall be protected for 30 days or until notified by the BLM to proceed.

If in connection with operations under this contract, the operator, its contractors, their subcontractors, or the employees of any of them discovers, encounters, or becomes aware of any objects or sites of cultural value or scientific interest such as historic ruins or prehistoric ruins, graves or grave markers, fossils, or artifacts, the operator shall immediately suspend all operations in the vicinity of the cultural resource and shall notify the BLM of the findings (16 USC 470h-3, 36 CFR 800.112). Operations may resume at the discovery site upon receipt of written instructions and authorization by the BLM. Approval to proceed will be based upon evaluation of the resource. Evaluation shall be by a qualified professional selected by the BLM from a Federal agency insofar as practicable. When not practicable, the operator shall bear the cost of the services of a non-Federal professional.

Within five working days, the BLM will inform the operator as to:

- whether the materials appear eligible for the National Register of Historic Places
- what mitigation measures the holder will likely have to undertake before the site can be used (assuming that *in-situ* preservation is not necessary)
- the timeframe for the BLM to complete an expedited review under 36 CFR 800.11, or any agreements in lieu thereof, to confirm through the SHPO State Historic Preservation Officer that the findings of the BLM are correct and that mitigation is appropriate

The operator may relocate activities to avoid the expense of mitigation and delays associated with this process, as long as the new area has been appropriately cleared of resources and the exposed materials are recorded and stabilized. Otherwise, the operator shall be responsible for mitigation costs. The BLM will provide technical and procedural guidelines for relocation and/or to conduct mitigation. Upon verification from the BLM that the required mitigation has been completed, the operator will be allowed to resume construction.

Antiquities, historic ruins, prehistoric ruins, and other cultural or paleontological objects of scientific interest that are outside the authorization boundaries but potentially affected, either directly or indirectly, by the Proposed Action shall also be included in this evaluation or mitigation. Impacts that occur to such resources as a result of the authorized activities shall be mitigated at the operator's cost, including the cost of consultation with Native American groups.

Any person who, without a permit, injures, destroys, excavates, appropriates or removes any historic or prehistoric ruin, artifact, object of antiquity, Native American remains, Native American cultural item, or archaeological resources on public lands is subject to arrest and penalty of law (16 USC 433, 16 USC 470, 18 USC 641, 18 USC 1170, and 18 USC 1361).

16. Visual Resources. Existing vegetation shall be preserved when clearing and grading for pads, roads, and pipelines. The BLM may direct that cleared trees and rocks be salvaged and redistributed over reshaped cut-and-fill slopes or along linear features.

Production facilities shall be placed to avoid or minimize visibility from travel corridors, residential areas, and other sensitive observation points—unless directed otherwise by the BLM due to other resource concerns—and shall be placed to maximize reshaping of cut-and-fill slopes and interim reclamation of the pad.

Above-ground facilities shall be painted **Shadow Gray** to minimize contrast with adjacent vegetation or rock outcrops. The color shall be specified by the BLM and attached as a COA to individual APDs.

During construction, BLM and Williams representatives shall jointly review construction measures to determine effectiveness in meeting visual resource mitigation measures, and if subtle changes in construction techniques are warranted.

17. Soils. Cuts and fills shall be minimized when working on erosive soils and slopes in excess of 30 percent. Cut-and-fill slopes shall be stabilized through revegetation practices with an approved seed mix shortly following construction activities to minimize the potential for slope failures and excessive erosion. Fill slopes adjacent to drainages shall be protected with well-anchored silt fences, straw wattles, or other acceptable BMPs designed to minimize the potential for sediment transport. On slopes greater than 50 percent, BLM personnel may request a professional geotechnical analysis prior to construction.

18. Interim Reclamation Related to Drilling Phases. Within 1 year of completion of all exploratory wells proposed on a pad or within one year of completion of all development wells on a pad (whichever the situation may be), the operator would stabilize the disturbed area by recontouring, mulching, providing run-off and erosion control, replacing topsoil as directed, and seeding with BLM-prescribed native seed mixes (or landowner requested seed mix on Fee surface), and conducting weed control, as necessary. In cases where the exploratory drilling and development drilling on a single pad occur more than 1 year apart, slopes shall be recontoured to the extent necessary to accommodate seeding, and seed mixes required by BLM or requested by the private landowner shall be applied to stabilize the soil between visits per direction of the BLM.

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DOWNHOLE CONDITIONS OF APPROVAL
Applications for Permit to Drill

Company/Operator: Williams Production RMT Co. LLC

Surface Location: SENW, Section 36, Township 6 South, Range 94 West, 6th P.M.

<u>Well Name</u>	<u>Well No.</u>	<u>Well Pad</u>	<u>Bottomhole Location</u>	<u>Surface Lease</u>	<u>Bottomhole Lease</u>
RWF	11-36	GV 15-36	NWNW, Sec 36, T6W, R94W	COC53640	COC07506
RWF	311-36	GV 15-36	NWNW, Sec 36, T6W, R94W	COC53640	COC07506
RWF	411-36	GV 15-36	NWNW, Sec 36, T6W, R94W	COC53640	COC07506
RWF	511-36	GV 15-36	NWNW, Sec 36, T6W, R94W	COC53640	COC07506
RWF	12-36	GV 15-36	SWNW, Sec 36, T6W, R94W	COC53640	COC07506
RWF	312-36	GV 15-36	SWNW, Sec 36, T6W, R94W	COC53640	COC07506
RWF	412-36	GV 15-36	SWNW, Sec 36, T6W, R94W	COC53640	COC07506
RWF	512-36	GV 15-36	NWSW, Sec 36, T6W, R94W	COC53640	COC07506
RWF	313-36	GV 15-36	NWSE, Sec 36, T6W, R94W	COC53640	COC07506

1. Twenty-four hours *prior* to (a) spudding, (b) conducting BOPE tests, (c) cementing/running casing strings, and (d) within twenty-four hours *after* spudding, the CRVFO shall be notified by contacting a CRVFO inspector at 970-876-9064. The CRVFO inspectors are Julie King, Lead PET; David Giboo, PET; Greg Rios, PET; and Alan White, PET.
2. A CRVFO petroleum engineer shall be contacted for a verbal approval prior to commencing remedial work, plugging operations on newly drilled boreholes, changes within the drilling plan, sidetracks, changes or variances to the BOPE, deviating from conditions of approval, and conducting other operations not specified within the APD. Contact Will Howell at 970-876-9049 (office) or 970-319-5837(cell) for verbal approvals.
3. If a well control issue (e.g. kick, blowout, water flow, casing failure, or bradenhead pressure increase) arises during drilling or completions operations, Will Howell 970-876-9049(office), 970-319-5837(cell) shall be notified within 24 hours from the time of the event. IADC/Driller's Logs and Pason Logs (mud logs) will be forwarded to CRVFO, Will Howell, 2300 River Frontage Road, Silt, CO 81652 within 24 hours of a well control event.
4. The BOPE shall be tested and conform to Onshore Order #2 for a **3M** system and recorded in the IADC/Driller's log. A casing head rated to 3,000 psi or greater shall be utilized.
5. Flexible choke lines shall meet or exceed the API SPEC 16C requirements. Flexible choke lines shall be effectively anchored, have flanged connections, and configured to the manufacturer's specifications. Manufacturer specifications shall be kept with the drilling rig at all times and immediately supplied to the authorized officer/inspector upon request. Specifications, at a minimum, shall include acceptable bend radius, heat range, anchoring, and the working pressure. All flexible choke lines shall be free of gouges, deformation, and as straight/short as possible.
6. Prior to drilling out the surface casing shoe, an electrical/mechanical mud monitoring equipment shall be function tested. As a minimum, this equipment shall include a trip tank or equivalent calibrated mud tank, pit volume totalizer, stroke counter, and flow sensor.

7. Prior to drilling out the surface casing shoe, gas detecting equipment shall be installed in the mud return system. The mud system shall be monitored for hydrocarbon gas/pore pressure changes, rate of penetration, and fluid gain/loss.
8. Prior to drilling out the surface casing shoe, a gas buster shall be functional and all flare lines effectively anchored in place. The panic line shall be a separate line (not open inside the buffer tank) and effectively anchored. All lines shall be downwind of the prevailing wind direction and directed into a flare pit, which cannot be the reserve pit. The flare system shall use an automatic ignition. Where noncombustible gas is likely or expected to be vented, the system shall be provided supplemental fuel for ignition and maintain a continuous flare.
9. A length of 1,106 to 1,134 feet of Surface Casing will be required on these wells to protect potential water source/aquifers and control loss circulation zones.
10. After the surface/intermediate casing is cemented, a Pressure Integrity Test/Mud Equivalency Test/FIT will be performed on the first well drilled in accordance with OOGO No. 2; Sec. III, B.1. i. in order to make sure the surface casing is set in a competent formation. This is not a Leak-off Test, but a formation competency test, insuring the formation at the shoe is tested to the minimum mud weight equivalent anticipated to control the formation pressure to the next casing shoe depth or TD. Submit the results from the test via email (whowell@blm.gov) on the first well drilled on the pad and record results in the IADC log.
11. As a minimum, cement shall be brought to 200 feet above the Mesaverde. After WOC for the production casing, a CBL shall be run to verify the TOC and an electronic copy in .las and .pdf format will be submitted to CRVFO, Will Howell, 2300 River Frontage Road, Silt, CO 81652 within 48 hours. If the TOC is lower than required or the cement sheath of poor quality, a CRVFO petroleum engineer shall be notified for remedial operations within 48 hours from running the CBL and prior to commencing fracturing operations. Please Evaluate the top of cement on the first cement job on the pad (Temperature Log).
12. On the first well drilled on this pad, a triple combo open-hole log shall be run from the base of the surface borehole to surface, and from TD to bottom of surface casing shoe. This log shall be in submitted within 48 hours in .las and .pdf format to CRVFO, Will Howell/Todd Sieber, 2300 River Frontage Road, Silt, CO 81652. Contact Todd Sieber at 970-876-9063 or asieber@blm.gov for clarification.
13. Submit the (a) mud/drilling log (e.g. Pason disc), (b) driller's event log/operations summary report, (c) directional survey, and (d) Pressure Integrity Test results within 30 days of cementing the production casing per 43 CRF 3160-9.
14. During hydraulic frac operations, monitor the bradenhead/casing head pressures throughout the frac job. Any sharp rise in annular pressure (+/- 40 psi or greater) will terminate the frac operations in order to determine well/wellbore integrity. Notify BLM CRVFO engineer/inspector of annular pressure increase.
15. Prior to commencing fracturing operations, the production casing shall be tested to the maximum anticipated surface treating/fracture pressure and held for 15 minutes without a 2% leak-off. If leak-off is found, Will Howell shall be notified within 24 hours of the failed test, but prior to proceeding with fracturing operations. The test shall be charted and set to a time increment as to take up no less

than a quarter of the chart per test. The chart shall be submitted with Form 3160-4, Well Completion Report.

16. Submit a monthly report of operations or production per 43 CFR 3162.4-3 including any production from these wells in MCFPD, BOPD, BWPD with FTP/SITP until the completion report (Form 3160-4) is filed.
17. Per CFR 3162.4-1(c), not later than the 5th business day after any well begins production on which royalty is due anywhere on a lease site or allocated to a lease site, or resumes production in a case of a well which has been off production for more than 90 days, the operator shall notify the authorized officer by letter or sundry notice, Form 3160-5, or orally to be followed by a letter or sundry notice, of the date on which such production has begun or resumed.

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FONSI

DOI-BLM-CO-N040-2011-0085-EA

The Environmental Assessment (EA) analyzing the environmental effects of the Proposed Action has been reviewed. The project design and approved mitigation measures result in a Finding of No Significant Impact (FONSI) on the human environment. Therefore, an Environmental Impact Statement (EIS) is not necessary to further analyze the environmental effects of the Proposed Action.

DECISION RECORD

DECISION: It is my decision to approve the Proposed Action as described and analyzed in this EA. This decision will provide for the orderly, economical, and environmentally sound exploration and development of oil and gas resources on a valid Federal oil and gas lease.

RATIONALE: The bases for this decision are as follows:

1. Approval of the Proposed Action is validating the rights granted with the Federal oil and gas leases to develop the leasehold to provide commercial commodities of oil and gas.
2. The environmental impacts would be avoided, minimized, or offset with the mitigation measures incorporated into the Proposed Action or attached and enforced by BLM as Conditions of Approval (COAs).
3. This Decision does not authorize the initiation of surface-disturbing activities on BLM lands or of drilling activities associated with any Federal oil and gas well. Initiation of activities related to the new Federal oil and gas well to be added to the existing well pad may commence only upon approval by BLM of an Application for Permit to Drill (APD) submitted by Williams Production RMT Company LLC.

MITIGATION MEASURES: Mitigation measures presented in Appendix A of the EA will be incorporated as COAs for both surface and drilling operations and attached to APDs for Federal wells added to the existing GV15-36 and RWF33-36 well pads. Because no APDs have yet been submitted by Williams for the RWF33-36, this EA analyzed impacts based on information provided with the Notice of Staking (NOS) and does not include downhole COAs for RWF33-36 wells. Surface-use and downhole COAs consistent with CRVFO's standard practice and with those attached to APDs for the GV15-36 pad (Appendix A) will be attached to APDs for the RWF33-36 pad at the time of approval of those APDs.

NAME OF PREPARER: Jim Byers, Natural Resource Specialist

SIGNATURE OF AUTHORIZED OFFICIAL:



Allen B. Crockett, Ph.D., J.D.
Supervisory Natural Resource Specialist

DATE: July 17, 2011