



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Grand Junction Field Office

2815 H Road

Grand Junction, Colorado 81506



February 13, 2012

On December 28, 2011, BLM reached a Decision regarding Southwestern Energy Ventures' plan to drill Four Proposed Desert Wells and to authorize SEV's submitted Applications for Permit to Drill. Environmental Assessment DOI-BLM-CO-130 2011-0038-EA analyzed the environmental impacts of the Proposed Action (Alternative A), Alternative B and the No Action Alternative.

On December 28, 2011, a Decision Record was signed approving Alternative B, which moved the proposed location of the Thomas #5 well pad by about 450 feet (132 meters). The rationale for the decision to approve Alternative B was that moving the pad lessened impacts to ephemeral stream drainages and rare plant habitat in fragile desert soils. Concerns regarding the safety and stability of proposed liquids (reserve) pit installation in loose sedimentary soils above a steep drop were also addressed by the selection of Alternative B.

As of February 13, 2012, this Decision is remanded. Further EA review has resulted in reconsideration of the operator's need to drill into a precise downhole target area delineated by specific subsurface geological features and of information provided subsequent to the EA that no fluids pit will be required on the site. Concerns regarding fluids pit stability in unstable soils near a steep drop have thus become moot. Lessening of surface disturbance by 0.03 acres was found to be minor compared to the requirement to drill to the prescribed downhole target. An expectation of successful surface reclamation of the desert ecological site is realistic, given a good native seedbank, shallow slopes with aspects to the east and north, and proposed and required state-of-the art reclamation plans and BMPs. No rare plant species were observed within areas surveyed for the well pad, access road/pipeline corridor or within 400-foot buffers from the pad exteriors and 100-foot buffers around the access road/ pipeline corridor.

On February 13, 2012, a new Decision Record was signed approving the Proposed Action, with requirements to implement and comply with all attached mitigation measures and monitoring requirements. The approved APD remains in full force and effect and reflects the remanded decision to approve the Proposed Action.

**United States Department of the Interior
Bureau of Land Management**

**Environmental Assessment
for the
Southwestern Energy Ventures - Four Proposed Desert Wells**

Grand Junction Field Office
2815 H Road
Grand Junction, Colorado 81506

DOI-BLM-CO-130-2011-0038-EA

December 2011

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CHAPTER 1 - INTRODUCTION

1.1 IDENTIFYING INFORMATION

BACKGROUND:

This EA has been prepared by the Grand Junction Field Office (GJFO) of the Bureau of Land Management (BLM) in response to specific applications from Southwestern Energy Ventures Company (SEV) to explore their leased resources by entering the targeted geologic formations at four locations, then to test the resulting gas flows from the wells with the intention of bringing the gas to market. The agency's purpose and need for the proposed action is to allow SEV to exercise their rights to explore and develop leased resources, which would support the goal of continuing to meet the nation's energy needs. Should the proposed action be approved, it would include mitigation measures to alleviate resource impacts in accordance with the objectives and decisions of the Grand Junction Resource Area Management Plan (1987), as well as other applicable policies, regulations, and laws.

CASEFILE/PROJECT NUMBER: DOI-BLM-CO-130-2011-0038-EA

PROJECT NAME: Southwestern Energy Ventures - Four Proposed Desert Gas Wells

PLANNING UNIT: Grand Junction Field Office, 2815 H Road, Grand Junction, CO 81506

APPLICANT: Southwestern Energy Ventures Company, P.O. Box 339, Ignacio, CO 81137

1.2 PROJECT LOCATION AND LEGAL DESCRIPTION

LEGAL DESCRIPTION:

The project is located in a desert area about 5 to 10 miles northwest of Mack, Colorado, in Mesa County. Access to the area is by existing roads: Interstate 70's Exit 11; Colorado Highways 6 and 50 westbound and Mesa County Roads 1.80 and 1.60. The project location is within Sections 4 and 6 of Township 09 South, Range 104 West from the 6th Principal Meridian (PM) in Mesa County Colorado (Figure 1). General legal descriptions of the proposed wells are as follows:

Well: Federal 6-6 (Fig. 2 & 3)
6th PM, Mesa County Colorado,
T. 9 S., R. 104 W.,
Sec. 6, Lot 6
Lease COC-65156

Well: Ezra #3 (Fig 6 & 7)
6th PM, Mesa County Colorado,
T. 9 S., R. 104 W.,
Sec. 4, SESW
Lease COC-65155

Well: Lee #2 (Fig. 4 & 5)
6th PM, Mesa County Colorado,
T. 9 S., R. 104 W.,
Sec. 6, Lot 15
Lease COC-65156

Well: Thomas #5 (Fig. 8 & 9)
6th PM, Mesa County Colorado,
T. 9 S., R. 104 W.
Sec. 4, Lot 20
Lease COC-65155

1.3 PURPOSE AND NEED

The purpose of the proposed action is to permit SEV, through the approval of submitted Applications for Permit to Drill, to discover and produce natural gas from the above four locations on the valid federal oil and gas mineral leases issued to SEV by the BLM. The need for the proposed action is established under the Mineral Leasing Act of 1920 (MLA) and the Federal Land Policy and Management Act of 1976 (FLPMA), which establish the BLM's responsibility to respond to the submitted Applications for Permit to Drill and request for Rights of Way. It is the policy of the BLM to make mineral resources available for lease and to encourage their development to meet national, regional, and local needs. The Mineral Leasing Act of 1920 (MLA), as amended [30 USC 181 et seq.], authorizes the BLM to issue oil and gas leases for the exploration of oil and gas and permit the development of those leases. The existing leases are binding legal contracts that allow development of the mineral by the lease holder. Approved BLM Applications for Permit to Drill (APD) authorize the applicant to construct and drill the proposed wells and include access to the proposed wells, associated pipeline and well facility infrastructures, and to construct necessary new accesses to the proposed locations.

The development of SEV's Four Proposed Desert Wells would allow SEV to develop their leased resources and provide additional natural gas for the national energy market. This would generate federal and state tax revenue as well as revenue for SEV and local economies.

1.4 PLAN CONFORMANCE REVIEW

PLAN CONFORMANCE REVIEW: The Proposed Action is subject to and has been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

Name of Plan: Grand Junction Resource Management Plan

Date Approved: JANUARY, 1987

Decision Number/Page: 2-7

Decision Language:

To make Federal oil and gas resources available for leasing, except where prohibited by law or where administrative action is justified in the national interest and to make public lands available for economically and environmentally sound exploration and development projects. To avoid health and safety hazards, to protect sensitive resource values from unacceptable impacts and to minimize impacts to lessees from sensitive resource protection and hazard avoidance.

In January 1997, the Colorado State Office of the BLM approved the Standards for Public Land Health and amended all RMPs in the State. Standards describe the conditions needed to sustain public land health and apply to all uses of public lands.

Standard 1: Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes.

Standard 2: Riparian systems associated with both running and standing water function properly and have the ability to recover from major disturbance such as fire, severe grazing, or 100-year floods.

Standard 3: Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species' and habitats' potential.

Standard 4: Special status, threatened and endangered species (federal and state), and other plants and animals officially designated by the BLM, and their habitats, are maintained or enhanced by sustaining healthy, native plant and animal communities.

Standard 5: The water quality of all water bodies, including ground water where applicable, located on or influenced by BLM lands will achieve or exceed the Water Quality Standards established by the State of Colorado.

Because standards exist for each of these five categories, a finding must be made for each in an environmental analysis. These findings are located in Chapter 3 of this document.

Additionally, the Operator is required to:

- Comply with all applicable Federal, State and Local laws and regulations.
- Obtain the necessary permits for the drilling, completion and production of these wells including water rights appropriations, the installation of water management facilities, water discharge permits, stormwater management planning, and relevant air quality permits.

1.5 PUBLIC PARTICIPATION

1.5.1 Scoping

NEPA regulations (40 CFR §1500-1508) require that the BLM use a scoping process to identify potential significant issues in preparation for impact analysis. The principal goals of scoping are to allow public participation to identify issues, concerns, and potential impacts that require detailed analysis. Public posting is the primary means used by the BLM to notify the public of the opportunity to identify issues regarding the proposed exploratory gas wells—SEV's Four Proposed Desert Wells—with associated rights-of-way for access road and pipeline construction.

Persons/Public/Agencies Consulted: Scoping, by posting this project at the Grand Junction File Office and on the Grand Junction Field Office NEPA website, was the primary mechanism used by the BLM to initially identify issues. Parties with known interests or BLM permits in the area were notified by letter, including Mesa County, Colorado Parks and Wildlife (CPW), the Moab Field Office of the BLM and grazing permittees.

Internal scoping was conducted within the BLM GJFO. The following issues were identified and addressed:

1. All pipeline routes are proposed in (what should be on the Wildlife Resource Information System (WRIS) maps as) Potential Occupied Habitat for kit fox. The BLM has installed a number of habitat improvement features in the vicinity of the proposed Federal #6-6 and Lee #2 locations. Habitat fragmentation from road development is a prime concern related to kit fox conservation.

2. Active prairie dog colonies exist at the proposed pads, access and pipelines for wells Federal #6-6 and Lee #2. Burrowing owls could also occur within these colonies.
3. Proposed wells Lee #2 and Federal #6-6 are located in a pronghorn antelope winter concentration area.
4. The water catchment in proximity to the Federal #6-6 location (Bar-X reservoir) should be cleaned out while earth moving equipment is in the area.
5. The Thomas #5 well location is proposed at the head of and would occupy the top of a small braided ephemeral drainage system in fragile desert soils with sparse vegetation. This location would require that the access road and pipeline cross two other small ephemeral depressions. The pipeline proposed along adjacent Mesa County Road (MCR) 1.60 Road would additionally cross two larger ephemeral depressions with drainage patterns that would require culvert installation. Field investigations by BLM personnel resulted in consideration of alternate nearby sites.
6. Damage to old juniper trees located at one corner of the proposed Ezra #3 well pad should be avoided.
7. The Ezra #3 pipeline should be located along the east side of the existing road, to reduce the number of trees that would be removed.
8. Lease COC-65156, in which proposed wells Federal #6-6 and Lee #2 are located, includes Stipulation 13EC, to protect seasonal habitat of Threatened and Endangered black-footed ferret. Prairie dog towns and related sensitive species may be expected, and in fact are found, in the area. The stipulation, from Appendix D of the 1987 Grand Junction Resource Management Plan says:

The operator shall submit a plan for avoidance or mitigation of impacts on the identified species to the authorized officer. This may require completion of an intensive inventory by a qualified biologist. The plan must be approved prior to any surface disturbance. The authorized officer may require additional mitigation measures, such as relocation of proposed roads, drilling sites or other activities. Where impacts cannot be mitigated to the satisfaction of the authorized officer, surface occupancy on that area must be prohibited.
9. The BLM and CPW identified a cliff nest immediately NE of the proposed Ezra #3 location.
10. Weed and fire concerns were documented at the proposed Federal #6-6 due to the amount of cheat grass in the area.
11. An existing pasture fence crosses through the proposed Federal #6-6 well location. SEV would like to adjust the existing fence to avoid the well so they can use previously disturbed ground.
12. At all locations, reclamation should be fenced to exclude cattle.

13. The Lee #2 well pad was relocated at the onsite inspection to the northeast, into an existing opening in a relatively intact area of high quality sagebrush habitat.
14. The Lee #2 access road and pipeline were relocated about 0.25 – 0.30 mile to the north at the onsite inspection, to limit proposed disturbance by making use of an existing two-track. New access to the pad would occur on the north and west edge of the high quality sagebrush stand.
15. Reclamation of the Lee #2 should restore pronghorn habitat and include native shrubs, grasses, and forbs appropriate to the ecological site disturbed.

The drainage located in Section 8 and 20 to the south and east of the proposed Lee #2 provides water to two wildlife/stock ponds utilized by pronghorn antelope and mule deer in the area.

16. A cattle guard on the existing MCR 1.60 RD east of the proposed Thomas #5 access may need to be moved or cleaned out if the project is approved.
17. A very steep drop is located immediately to the west and south of the proposed location for the Thomas #5 pad. The reserve pit is proposed to be located along the south edge, next to the steep drop, within loose sedimentary soils.

1.6 DECISION TO BE MADE

Based on the analysis contained in this Environmental Assessment (EA), the BLM will decide whether or not to approve SEV's Four Proposed Desert Wells and authorize the submitted Applications for Permit to Drill. The BLM may choose to: a) accept the project as proposed, b) accept the project with modifications/mitigations, c) accept an alternative to the proposed action, or d) deny the project as proposed at this time.

CHAPTER 2 - PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

The purpose of this chapter is to provide information on the Proposed Action and Alternatives. Seven (7) alternatives were identified to address the development of mineral resources from the Four Proposed Desert Wells. Three (3) of these alternatives are analyzed in detail: The Proposed Action, Alternative 1, and No Action. The remaining alternatives were considered but not analyzed in detail. They are also discussed.

2.2 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

2.2.1 Collocation and Centralization of Well Pads and Facilities

SEV examined the likelihood of accessing the mineral estates from one or two centralized well pads locations, to minimize surface disturbance. This alternative would

require the implementation of directional or horizontal drilling techniques. The depth to the target formations at each proposed well ranges from 2,500 to 3,335 feet. To optimize the production of recoverable reserves within the target formations, the well bores must enter the formations vertically in order to achieve the best possible well completions. The distances between well bores range from 2,908 feet to 13,839 feet. Taking into consideration (1) the depth to the target formations, (2) the lateral distance required to reach the bottom-hole targets of the Four Proposed Desert Wells, and (3) the maximum directional curve achievable to retain a viable, cased, and cemented producing well bore, SEV determined they could not vertically enter the formations at the desired bottom-hole locations beyond 500 feet distant from any surface location. Entering a formation with a well bore placed at an angle would inhibit a well's completion potential. This could result in reduced production from the well bores, creating the need to drill additional wells to equal the production capability accomplished by a single vertical entry scenario. If SEV drilled from a single centralized well pad location, vertical entry to the target formations would be located 3,988 to 6,462 feet short of the targeted bottom-holes. If SEV drilled from two centralized well pad locations, vertical entry to the target formations would occur 1,000 to 1,565.84 feet short of the targeted bottom-holes. Therefore, centralized locations would not reach downhole formation targets. This was determined not to be a reasonable alternative and has not been analyzed.

2.2.2 Second Alternate - Thomas #5 Location

An alternate location for the Thomas #5 was considered during an onsite inspection on March 10, 2011. This location would abut MCR 1.60 RD. It would not require a new access road. This alternate location was eliminated from detailed analysis based on three (3) reasons. First, this location contains a greater catchment area up-gradient resulting in more stormwater run-on to the location and increased stormwater challenges and threats to soils. Second, reconstruction of an unavoidable drainage during interim reclamation would be more complicated than other locations considered. Finally, the cut and particularly the amount of fill would be greater than the other locations considered.

2.2.3 Third Alternate - Thomas #5 Location

An alternate location for the Thomas #5 was considered during an onsite inspection on March 10, 2011. This location would have been positioned about ¼ mile farther northeast along MCR 1.60 RD, in a flat area. This location is a better location for soils because of the flat topography and the sage and piñon/juniper vegetation cover. The location would be better for construction and reclamation. However, it was eliminated from detailed analysis because it is too far from the geological objective.

2.2.4 Fourth Alternate - Thomas #5 Location

An alternate location for the Thomas #5 was considered during the March 10, 2011 onsite. It would be positioned on the ridge to the north, closer to MCR 1.60 RD and with the length of the pad running the length of the ridge. However, this location was eliminated because it is more visible from key observation points in the area, it presents stormwater challenges because of an adjacent drainage to the southeast, and it presents challenges to reclamation due to the southwest aspect.

2.3 ALTERNATIVES ANALYZED IN DETAIL

2.3.1 Proposed Action (Alternative A)

The proposed action is BLM approval of SEV's four Applications for Permit to Drill, with roads and pipelines (Figure 1). All would be on Federal surface and be drilled into valid unitized federal mineral leases. Table 1 provides a summation of estimated disturbances

Following the approvals, SEV would construct, drill and operate four wells (Ezra #3, Federal #6-6, Lee #2 and Thomas #5) for the extraction of mineral resources in the Brushy Basin Unit (COC-74791X), near the Colorado and Utah border, northwest of Mack, in Mesa County, Colorado. Held under the Unit are federal leases COC-65154, COC-65155, COC-65156, COC-65157, COC-65158, COC-69682, and COC-74031.

Two of the proposed wells would require new well pad construction on previously undisturbed surface. Two wells would require reoccupation and expansion of previously disturbed and reclaimed well pads. New pipelines would be constructed from the proposed well pads and terminate at an existing pipeline operated by ETC Canyon Pipeline, LLC. Access to the locations would utilize existing roads as well as require new access road construction where no roads currently exist. Estimated new surface disturbance from construction of all well pads, pipelines and access roads would be 13.07 acres. Activities within previously disturbed areas would total 7.66 acres. Total disturbance from the proposed action is 20.73 acres. Following well pad interim reclamation and pipeline reclamation, the total non-reclaimed and long-term disturbance would be 4.52 acres.

Federal #6-6: The location of the proposed Federal #6-6 site is within Lot 20 of Section 6, Township 09 South, Range 104 West, 6th PM; Lat: 39.30692° N, Long: -109.04682° E. The site would be accessed from an unnamed two-track BLM road at a point approximately 980 feet east of the unnamed road's intersection with Bar-X Gas Field Road. This two-track would receive very minimal upgrade. A new 170-foot long access would travel southeast from the unnamed road to the northern edge of the proposed location. Road construction would not exceed 25-feet in width.

Location construction would result in 275 x 180 feet of level well pad surface upon an existing plugged and abandoned well location. Topsoil would be stripped from the pad center, outward to the edges and bermed with woody and vegetative debris along the pad perimeter. Minimal cut slope and fill slope work would be required and would occur along the edges of the reclaimed well pad. Fill material would be required around the southeastern corner and a narrow band along the eastern edge of the well pad, reaching depths of 0.8 to 1.4 feet. Materials would be cut along the rest of the well pad borders and cuts would range from 0.2 feet to 2.4 feet. Excavated materials salvaged during construction of blooie and reserve pits would be stored off of the east edge of the pad within a 0.24 acre area.

Buried pipeline would extend about 170 feet from the well pad to an existing road, then turn north for about 2,680 feet along an existing road before it tied into an existing buried pipeline. Linear pipeline construction disturbance is proposed to be 50 feet wide. The existing road, along which the pipeline is proposed, continues northward and is also proposed as access to the Lee #2 well.

The Federal #6-6 well pad would be built on about 1.29 acres of reclaimed disturbance from a previously plugged and abandoned well. It would require about 0.23 acres of new surface disturbance beyond the previous disturbance. The access would result in a total disturbance of 0.10 acres. Of that, 0.07 acres would be new disturbance and 0.03 acres of disturbance would occur where the access would overlap the previous well pad. The pipeline would result in a total disturbance of 3.25 acres. Of that, 1.67 acres would be new surface disturbance and 1.58 acres would occur within the existing unnamed road. The total area of short-term disturbance would be 5.58 acres. Assuming complete and successful pipeline reclamation, after interim reclamation of the well pad, 0.87 acres of long-term disturbance are estimated, until the site would be finally reclaimed following plugging of the well.

Lee #2: The location of the proposed Lee #2 site is within Lot 15 (generally NENE), Section 6, Township 09 South, Range 104 West, 6th PM; Lat: 39.31390° N, Long: -109.03616° E. The site would share access with the Federal #6-6 along the unnamed two-track BLM road for 980 feet from the unnamed road's intersection with Bar-X Gas Field Road. The Lee #2 access would continue 2,792 feet north past the #6-6 on the unnamed road. This two-track would receive very minimal upgrades. New access would be constructed from the unnamed road east for about 2,500 feet into the south-west corner of the proposed Lee #2 well pad.

The proposed project would require a new level well pad 275 ft. x 180 ft. in size. Topsoil would be stripped from the pad center outward to the edges and bermed with woody and vegetative debris along the pad perimeter. The southwestern portion of the pad would require a maximum fill of 3.9 feet. Cut slopes along the northeastern portion of the well pad are not expected to exceed 3.2 feet. Excavated reserve and blooie pit material would be stored off the southeast edge of the pad within a 0.24 acre area.

About 2,500 feet of buried pipeline is proposed along the new road. Linear pipeline construction disturbance is proposed to be 50 feet wide. It would tie-in at the existing buried pipeline, close to the Federal #6-6 pipeline tie-in.

The well pad would require 1.52 acres of new surface disturbance. The access road would result in 1.42 acres of new disturbance. The pipeline would result in 2.91 acres of disturbance. Of that, 1.49 acres of new disturbance would occur beyond the proposed access road and 1.42 acres of disturbance would occur in the area of the proposed access. The total area of short-term disturbance would be 4.43 acres. Pipeline reclamation and interim reclamation of the pad would result in long-term disturbance of 2.11 acres, until the site was reclaimed following plugging of the well. Assuming complete and successful pipeline reclamation, after interim reclamation of the well pad, 2.11 acres of long-term

disturbance are estimated, until the site would be finally reclaimed following plugging of the well.

Ezra #3: The location of the proposed Ezra #3 well is within the SESW of Section 4, Township 09 South, Range 104 West, 6th PM; Lat: 39.30012 24° N, Long: -109.00561° E. It would be 9.5 miles northwest of the intersection of US Highways 6 & 50 with Interstate 70 at Exit 11. Immediate access to the location would be from an unnamed hardened two-track BLM road at a point 2,400 feet south of its intersection with MCR 1.60 Road. No upgrade to this road is proposed or required.

The location would result in a 225 x 180 foot level pad. Topsoil would be stripped from the pad center, outward to the edges and bermed with woody and vegetative debris along the pad perimeter. New excavation would be required to expand the previous disturbances and establish a level pad surface for new drilling and completion activities. Fill material reaching depths of 3.5 to 6.5 feet would be required to construct the well pad. Cuts would occur around the eastern corner to a depth of 3.9 feet. Excavated reserve and blooie pit material would be stored off of the east edge of the pad within a 0.25 acre area.

3,720 feet of buried pipeline are proposed along the existing road, at a construction width of 50 feet.

The well pad would be built on 0.85 acres of a previously reclaimed pad. The pipeline would result in 2.13 acres of disturbance within the existing road and 2.13 acres of new disturbance along that road, for a total disturbance of 4.26 acres. The total area of short-term disturbance would be 5.55 acres. Assuming complete and successful pipeline reclamation, after interim reclamation of the well pad, 0.57 acres of long-term disturbance are estimated, until the site would be finally reclaimed following plugging of the well.

Thomas #5: The location of the proposed Thomas #5 site is within Lot 20, Section 4, Township 09 South, Range 104 West, 6th PM; Lat: 39.30012° N, Long: -109.00561° E. This proposed location, strongly preferred by the operator, was chosen based on specific subsurface geological features potentially indicative of a gas pool. SEV believes that any relocation of pad likely impede them drilling into the targeted downhole formation.

The proposed project would require a new level well pad of 240 ft. x 170 ft. The pad dimensions were reduced at the onsite inspection, to avoid the steep drop to the west and south while still maintaining the well bore location in the operators preferred location. Reserve pit dimensions were also altered in order to set the fluids pit an additional 10 feet away from the steep drop to the west and south. Topsoil would be stripped from the pad center, outward to the edges and bermed with woody and vegetative debris along the pad perimeter. Topography would require more extensive cut and fill slope work than at the other proposed pads. Fill material would be required along the northern and northeastern edges of the well pad, and would range from 0.5 to 12.5 feet. Cuts would range from 3.0 to 8.0 feet along the remaining edges of the pad. Excavated reserve and blooie pit

material stockpiles would be stored off of the east corner of the pad within a 0.39 acre area. Approximately 0.96 acres of this pad would be interim-reclaimed after construction, when the well went into production.

Access would require about 740 feet of new road to be constructed from a new intersection with MCR 1.60 RD.

3,808 feet of buried pipeline would be constructed for the well, at a proposed construction width of 50 feet. The pipeline would follow the proposed access route for about 742 feet to MCR 1.60 RD and then continue west along MCR 1.60 RD for 3,066 feet before tying into the existing buried pipeline, near the Ezra #3 pipeline tie-in.

The Thomas #5 pad would require a total of 1.52 acres of new disturbance. The access would require 0.41 acres of new disturbance. The pipeline would share 1.77 acres of access road disturbance and require 2.18 acres of new disturbance, for a total of 3.95 acres. The total area of short-term disturbance would be 5.88 acres. Assuming complete and successful pipeline reclamation, after interim reclamation of the well pad, 0.97 acres of long-term disturbance are estimated, until the site would be finally reclaimed following plugging of the well.

2.3.2 Alternative B—Alternate Thomas #5 Location

Alternative B proposes an alternate Thomas #5 well location that would be 132 meters/444 feet closer to MCR 1.60 RD than the location described in the Proposed Action. Moving the pad, under Alternative B, would result in about 361 feet less of linear pipeline/access road disturbance, about 0.03 acres. One ephemeral stream that would be impacted by the Proposed Action would remain undisturbed under Alternative B. The Thomas #5 well pad, under Alternative B, would be larger than that in the Proposed Action, where pad size was minimized after the onsite inspection due to fragile soils in close proximity to a ridgeline. The larger Alternative B pad would measure 245 ft x 180 ft in comparison to 240 ft x 170 ft under the Proposed Action. Based on GIS terrain analysis, the Thomas #5 disturbances under Alternative B would be about 5.91 acres (Table 2). Short-term disturbance would occur to about 5.14 acres and 0.77 acres would remain as long-term disturbance until final reclamation. Under the Proposed Action, the Thomas #5 would disturb a total of 5.88 acres, with a short-term disturbance of 4.91 acres and a long-term disturbance of 0.97 acres. Other project components would remain the same as those under the Proposed Action.

2.3.3 No Action Alternative

The BLM NEPA Handbook (H-1790-1) states that for Environmental Assessments (EAs) on externally initiated proposed actions, the No Action Alternative generally means that the proposed activity would not take place. This option is provided in 43 CFR 3162.3-1 (h) (2). Under the No Action Alternative, the Applications for Permit to Drill would be denied. The proposed activities would not occur in the project area. No proposed drilling, road or pipeline construction, traffic increase or other impacts related to the proposal would occur on Federal surface or mineral estates beyond those currently permitted and/or actions analyzed and approved through previous NEPA decision

documents. No mitigation measures would be required. If the No Action Alternative were chosen, BLM would be unable to approve the APDs at this time.

Table 1: Proposed Action Disturbance Estimates for SEV's Four Proposed Desert Wells

Well Name	Facility	Length/Width	Total Disturbance (acres)	New Disturbance (acres)*	Existing Disturbance	Percent as New Disturbance	Post Reclaim Disturbance (acres)
Federal #6-6	Pad	275 ft x 180 ft	1.52	0.23	1.29	15%	0.77
	Road	170 ft x 25 ft	0.10	0.07	0.03	70%	0.10
	Pipeline	2,830 ft x 50 ft	3.25	1.67	1.58	51%	N/A
Lee #2	Pad	275 ft x 180 ft	1.52	1.52	0	100%	0.69
	Road	2,480 ft x 25 ft	1.42	1.42	0	100%	1.42
	Pipeline	2,540 ft x 50 ft	1.49	1.49	0	100%	N/A
Ezra #3	Pad	225 ft x 180 ft	1.28	0.43	0.86	0%	0.57
	Road	N/A	N/A	N/A	N/A	N/A	N/A
	Pipeline	3,720 ft x 50 ft	4.27	2.13	2.13	50%	N/A
Thomas #5	Pad	240 ft x 170 ft	1.52	1.52	0	100%	0.56
	Road	722 ft x 25 ft	0.41	0.41	0	100%	0.41
	Pipeline	3,808 ft x 50 ft	3.95	2.18	1.77	55%	N/A
Totals			20.73	13.07	7.66	60.5%	4.52

Note: * New disturbance includes ground disturbing activities not occurring within existing pipeline corridors, existing roads or previous well pads.

Table 2: Alternative B Disturbance Estimates for SEV's Four Proposed Desert Wells

Well Name	Facility	Length/Width	Total Disturbance (acres)	New Disturbance (acres)*	Existing Disturbance	Percent as New Disturbance	Post Reclaim Disturbance (acres)
Federal #6-6	Pad	275 ft x 180 ft	1.52	0.23	1.29	15%	0.77
	Road	170 ft x 25 ft	0.10	0.07	0.03	70%	0.10
	Pipeline	2,830 ft x 50 ft	3.25	1.67	1.58	51%	N/A
Lee #2	Pad	275 ft x 180 ft	1.52	1.52	0	100%	0.69
	Road	2,480 ft x 25 ft	1.42	1.42	0	100%	1.42
	Pipeline	2,540 ft x 50 ft	1.49	1.49	0	100%	N/A
Ezra #3	Pad	225 ft x 180 ft	1.28	0.43	0.86	0%	0.57
	Road	N/A	N/A	N/A	N/A	N/A	N/A
	Pipeline	3,720 ft x 50 ft	4.27	2.13	2.13	50%	N/A
Thomas #5	Pad	245 ft x 180 ft	1.74	1.74	0	100%	0.56
	Road	361 ft x 25 ft	0.21	0.21	0	100%	0.21
	Pipeline	3,447 ft x 50 ft	3.96	2.19	1.77	55%	N/A
Totals			20.76	13.10	7.66	63%	4.32

Note: * New disturbance includes ground disturbing activities not occurring within existing pipeline corridors, existing roads, or pre-existing well pads.

2.4 ACTIVITIES ASSOCIATED WITH THE ACTION ALTERNATIVES

2.4.1 Construction Phase

Dust would be controlled on the roads and locations during construction and drilling by the periodic watering of the roads and locations or the application of various dust agents, surfactants and road surfacing material. Dust agents and surfactants (except water) would require pre-approval before use on BLM lands. The water would be hauled by truck over the existing roads. Best Management Practices (BMPs) for stormwater sediment and erosion control would be implemented: Diversions (e.g. dikes and ditching) would be implemented along the uphill edges of well pad cut slopes to direct run-on water around the well pad disturbances. Disturbed slopes, including cut and fill slopes, would be protected against rills and erosion with measures such as water bars, lateral furrows, or other measures approved by the BLM. Woody vegetative debris, weed free straw bales, straw or excelsior wattles, and fabric silt fence would be used at the toe of the fill slopes, used as check dams in created diversions as necessary, and placed to filter water discharged to native grade from installed diversions. All construction materials for location sites and access roads would be native material collected during construction of the project. The need for additional construction materials from outside sources is not anticipated, but if it became required, BLM approval would be requested before materials were acquired from private sources.

Well Pads: Prior to site excavation, topsoil would be stripped to a minimum depth of 6 inches or to the depth of all growth medium above sub-soils, salvaged and stored as location perimeter berms, compacted if needed for stability, and seeded to maintain viability. Stored topsoil would be seeded within 48 hours of well pad final grading, following BLM temporary seeding measures. Construction of the locations would include clearing and stock-piling excess spoil, excavations, and fills of the sites, to prepare a level pad surface for drilling and completion operations. Where allowed, prior to interim reclamation, slopes of the well pads may be 2:1 or steeper to minimize the footprint.

A well head “cellar,” blooie pits, and cuttings pits would be excavated after final level pad grading, and their excess spoils stored within the designated storage areas. Necessary liners would be installed at this time. The liners would be made of a manmade synthetic material of sufficient size, thickness, and qualities to sustain a hydraulic conductivity no greater than 1×10^{-7} cm/sec after installation and which is sufficiently reinforced to withstand normal wear and tear associated with installation and use. The liner shall be chemically compatible with all substances that may be put into the pits. The reserve pit would be fenced on three sides during drilling operations and on the fourth side at the time of the rig release. The pit would remain fenced until backfilled.

Access Roads: New access road construction would include excavating, filling, and grading surfaces—following as much as possible the natural contour lines, to limit surface disturbance and visual resource impacts. Drainage crossings would be hardened low water crossings, made of the native materials encountered during construction. They would utilize appropriate slopes to minimize erosion and prevent vehicle damage to drainage bottoms. Culverts would only be used where access and drainage bed elevations

required such, in order to properly shape hardened crossings with minimal disturbance. New accesses would be constructed within a maximum 25-foot-width right-of-way, including driving surfaces, road banks, borrow ditches and cuts and fills. The average maximum road grade would be 8% or less, where possible. Eight percent grades would be exceeded in areas where terrain or unusual circumstances require it. No foreign surfacing material is proposed. Existing roads and two-tracks utilized would receive little to no upgrades.

Pipelines: Steel natural gas pipelines, up to 5-inches in diameter, would be installed to connect all four proposed wells to existing pipeline networks in the area. Pipelines would be placed, as much as possible, in and adjacent to existing and proposed roads, to reduce, total disturbance. Pipeline construction would include clearing vegetation and grading the alignment boundaries, excavating a trench, pipeline construction (stringing and welding), placing the pipeline in the trench and backfilling it. Buried pipelines would have a minimum cover of 48 inches while traversing roadways and at road crossings, 36 inches when crossing through typical soil and rock, and 24 inches when crossing through areas requiring rock blasting. As the permit holder, SEV is responsible for burying a pipeline to a depth that safely accommodates existing land and road uses and maintenance.

2.4.2 Drilling and Completion Phase

SEV drilling operations would be conducted in compliance with Federal Oil and Gas Onshore Orders, and all applicable Colorado Oil and Gas Conservation Commission rules and regulations. The Ezra #3, Federal #6-6, Lee #2 and Thomas #5 wells would be drilled to the proposed measured depths of 2,500, 2,500, 2,500 and 3,335 feet respectively. The target formations would be the Dakota-Morrison Formation and the Entrada Formation. Each well is anticipated to require about 30 days to drill and complete before the location would undergo interim reclamation.

Following site and pit construction, a mobile drilling rig (“rig”) and other equipment would be transported on multiple heavy vehicles to the location, where components would be assembled and the rig derrick erected. Other facilities and equipment that would be on the drilling site include: storage tanks for misting and equipment cooling water, pipe racks, catwalk, hopper, rig personnel camper trailers, and personnel vehicles.

Self-contained, chemical toilets would be provided for human waste disposal. Upon completion of operations, or as needed, the toilet holding tanks would be pumped and the contents thereof disposed of in the nearest facility approved for sewage disposal. Garbage, trash and other waste materials would be collected in a portable, self-contained and fully-enclosed trash cage during drilling and completion operations. Upon completion of operations (or as needed) the accumulated trash would be disposed of at an authorized sanitary landfill. No trash would be burned on location or placed in pits or bore holes. Immediately after removal of the drilling rig, all debris and other waste materials not contained in the trash cage would be cleaned up and removed from the well location. No adverse materials would be left on the location. Any open pits would be fenced to preclude entry by livestock and maintained until such time as the pits are backfilled.

All chemical containers would be clearly labeled, maintained in good condition and placed within secondary containment. They would not be stored on bare ground, nor exposed to sun and moisture. All installed production facilities (e.g. storage tanks, load outs, separators, treating units) with the potential to leak or spill oil, condensate, produced water, glycol, or other fluid which may be a hazard to public health or safety would be placed within an appropriate secondary containment structure. The structure would hold 110% of the capacity of the largest single container within it and be impervious to any oil, glycol, produced water, or other fluid for 72 hours.

The rig would utilize an air drilling technique unless the well could not be accomplished with this technique, at which time a mud drilling technique would be required. Drilling might use up to 50,000 gallons of water, per well, from the Fruita, Colorado municipal source for cleaning equipment and cooling the engines. During drilling operations, damp drill cuttings would be contained within the blooie/reserve pit.

The Federal #6-6 location would utilize the existing surface and production casings already in place. For the remaining three proposed wells, drilling would begin, continuing through any fresh water bearing formations, then halt. A “shoe” (i.e. a seal) would be landed at the bottom of the hole, a surface pipe (“casing”) would be installed from the surface down to the shoe, and then cement would be circulated between the rough wall of the well bore and the casing pipe (“annulus”). Drilling would resume to the target formation(s) and a production casing landed and cemented to provide at least 500 feet of cement above the Dakota Formation. Casings prevent interzonal interaction between oil and gas bearing zones and usable water zones and maintain the integrity of the bore. Drilling and completion activities might take 2-3 weeks depending on well depth and would continue 24-hours a day.

Following drilling, the drilling rig is typically moved off the location and a completion rig would take its place. Perforations would be shot through the production string across the zone of the target formation, to prepare for hydraulic fracturing. Fracturing materials, including sand, multiple 300-400 bbl tanks (based on well depth), and pumps would also be moved to the location. Tanks are placed together in a series, then completions fluids are mixed and fill the tanks. The completion rig would connect to the perforated casing and begin fracturing the target formations through the perforations using pressurized sand, water, fracturing fluids, and proppants (to hold created subsurface fractures open). After completion, the fluids (water and fracturing fluids) would be removed from the well bore and a well head would be installed. Completion fluids would be allowed to flow back to the on-site tanks. Drill cuttings would be tested to meet COGCC Rule Table 910-1 standards. They would be buried in place if the standards are met, treated to meet standards as achievable, or hauled from the location and disposed of at a landfill if exceedances can't be mitigated. Liquid hydrocarbons produced during completion operations would be separated and placed in test tanks on the location. Recycled water from fracturing would be confined to the pit or storage tanks for a period not to exceed ninety (90) days after initial production. Completions rigs are considered “daylight” rigs and operate during normal daylight hours only.

2.4.3 Production Phase

Should subsurface water interfere with the well's ability to freely flow gas, a pump jack might be installed to lift the water to the surface, where it would be contained in tanks. A natural gas fired pump jack is likely to be installed on locations where the wells did not flow gas upon completion. Production facilities, including meter-runs, gas separators and produced water storage tanks would be installed on the well pads and remain for the productive life of the wells.

Water and condensate (light diesel-level hydrocarbons) might be produced through the well-head with the gas. A three-phase separator unit would be used on location to separate condensate and water from gas. The separated water would be stored on well locations in 300 barrel tanks (about 12 feet in diameter by 15 feet high). The water would periodically be trucked from the locations to distant Environmental Protection Agency (EPA) Class II injection wells or other approved disposal facilities. Separated condensate would be stored within screen-topped, partially buried tanks at each location if encountered.

2.4.4 Interim-Reclamation and Final Abandonment and Reclamation

Interim Reclamation: Following drilling and completion of each well and after contacting the BLM, the drilling pads would be reclaimed to the extent possible while still allowing for production of the well. Known as interim reclamation, this would reduce pad size enough to maintain space for production operations. Interim reclamation would reduce the size of each of the four SEV pads to between 0.5 and 0.8 acres.

Prior to interim reclamation, SEV would meet with BLM to inspect the disturbed area, review the existing reclamation plan and agree upon any revisions to the plan. The well pad location and surrounding area(s) would be cleared of all debris, materials, trash and junk not required for production. Hydrocarbons on location should be removed in accordance with Onshore Order #7. The cuttings pit and portions of the location not needed for production facility/operations would be reclaimed within ninety (90) days from the date of well completion, weather permitting.

Areas unnecessary to operation would be reshaped to blend with natural topography to the extent possible. Fill slopes would be restored closer to their original contours and excess soils would be blended or contoured into large 'natural' berms to provide visual and stormwater benefits. All stored soils would be reshaped and all topsoil would be distributed across the reclaimed areas, prepared for seeding as appropriate and seeded with a BLM-approved seed mix. For compacted areas, initial re-contouring and seedbed preparation would include ripping to a minimum depth of 18-24 inches on 12-24 inch spacing. Where possible, ripping would be done in two passes at perpendicular directions with the final pass on contour to promote snowmelt and rain infiltration and minimize the erosion potential. On sites with limited topsoil resources (less than 1" depth) or sites with undesirable subsoils (to prevent topsoil and subsoil mixing) compaction relief would take place prior to topsoil redistribution. Compaction relief would take place after mass rough grading has been accomplished. In cases where loose or erodible soils may be lost, compaction would be introduced to subsoil and topsoil as necessary. Rough grading would be accomplished in a manner that incorporates visual, stormwater and revegetation

management needs. Ideally, interim reclamation would accomplish as much final reclamation as possible.

Other than micro-depressions created to support reclamation success, such as pitting or pocking, and terminal stormwater containments (designed to eventually silt themselves out of existence) and the pad stormwater/snow storage basins for stormwater management, no depressions would be left that would trap water or form ponds. Following contouring, all backfilled, ripped or otherwise disturbed surfaces would be evenly covered with salvaged topsoil. When topsoil resources are in short supply, they would be spread in the following priority; south facing slopes, west facing slopes, east facing slopes, north facing slopes, shallow slope areas, drainage swales and lastly containment bottoms. Final seedbed preparation would include scarifying such as disking, pitting, contour cultivating, raking or harrowing the redistributed topsoil prior to seeding. The seedbed may also be rollerpacked, following the natural contours. If the area is to be broadcast-seeded or hydro-seeded, or if more than one season has elapsed since final seedbed preparation, scarification would be repeated within 24 hours of seeding to enhance seed-to-soil contact. If seed is drilled, it would be on contour, generally at a depth no greater than one-half inch (1/2), dictated by seed types. In areas that cannot be drilled, seed would be broadcast at double the seeding rate (except for native aggressive species) and harrowed into the soil if 24 hours has elapsed since seedbed preparation.

The objectives of interim reclamation are to restore sufficient landform to maintain healthy, biologically active topsoil, including vegetative cover; control erosion and sediment transport; and minimize losses of habitat, visual resources, and forage throughout the project life. Interim reclamation performance standards would be considered met when disturbed areas not needed for long-term production operations or vehicle travel were recontoured and stabilized; revegetated with a self-sustaining, vigorous, diverse, native (or otherwise approved) plant communities that minimize visual impacts, provide forage, and stabilize soils. Seeded species would be considered firmly established when at least 50 percent of the new plants are producing seed.

All permanent (onsite for six months or longer) above ground structures constructed or installed, including pumping units, would be painted a flat non-reflective, earth tone color to match one of the standard environmental colors as determined by the BLM. All production facilities would be painted within 30 days of installation unless weather precludes. Facilities requiring compliance with Occupation Health and Safety Act Rules and Regulations would be excluded from this painting requirement. Guards would be installed around the well for protection from wildlife and livestock.

Final Abandonment and Reclamation: When a well was no longer productive, it would be plugged and abandoned. Plugging requires the filing of the perforated zone(s) with cement. In a vertical or directional well, this is normally taken to extend 50 feet above and below the perforations. The surface casing usually is filled with a 50-foot cement cap across all annuli near the surface.

Prior to final reclamation of a well pad, SEV would meet with BLM to inspect the disturbed area, review the existing reclamation plan, and agree to any changes to the plan. The BLM would be notified at least 48 hours prior to commencing any reclamation work and within 48 hours of completion of reclamation work. Final reclamation would return the location and its access to as near pre-disturbance contours and vegetation as possible. Re-contouring for final reclamation would consist of returning the pad, material storage piles, cut-and-fill slopes, and stormwater control features to natural contours that blend with adjacent undisturbed areas, as specified in the final reclamation plan or final reclamation plat approved by BLM. Requirements for seedbed preparation, soil amendments, seed mixes (including seed tags and weed-free seed), seeding procedures, mulching, erosion control, site security, and monitoring shall be as specified for temporary seeding and interim reclamation.



VICINITY MAP

0 2.5 5 10 15 20 Miles



Legend

★ SEV Wells

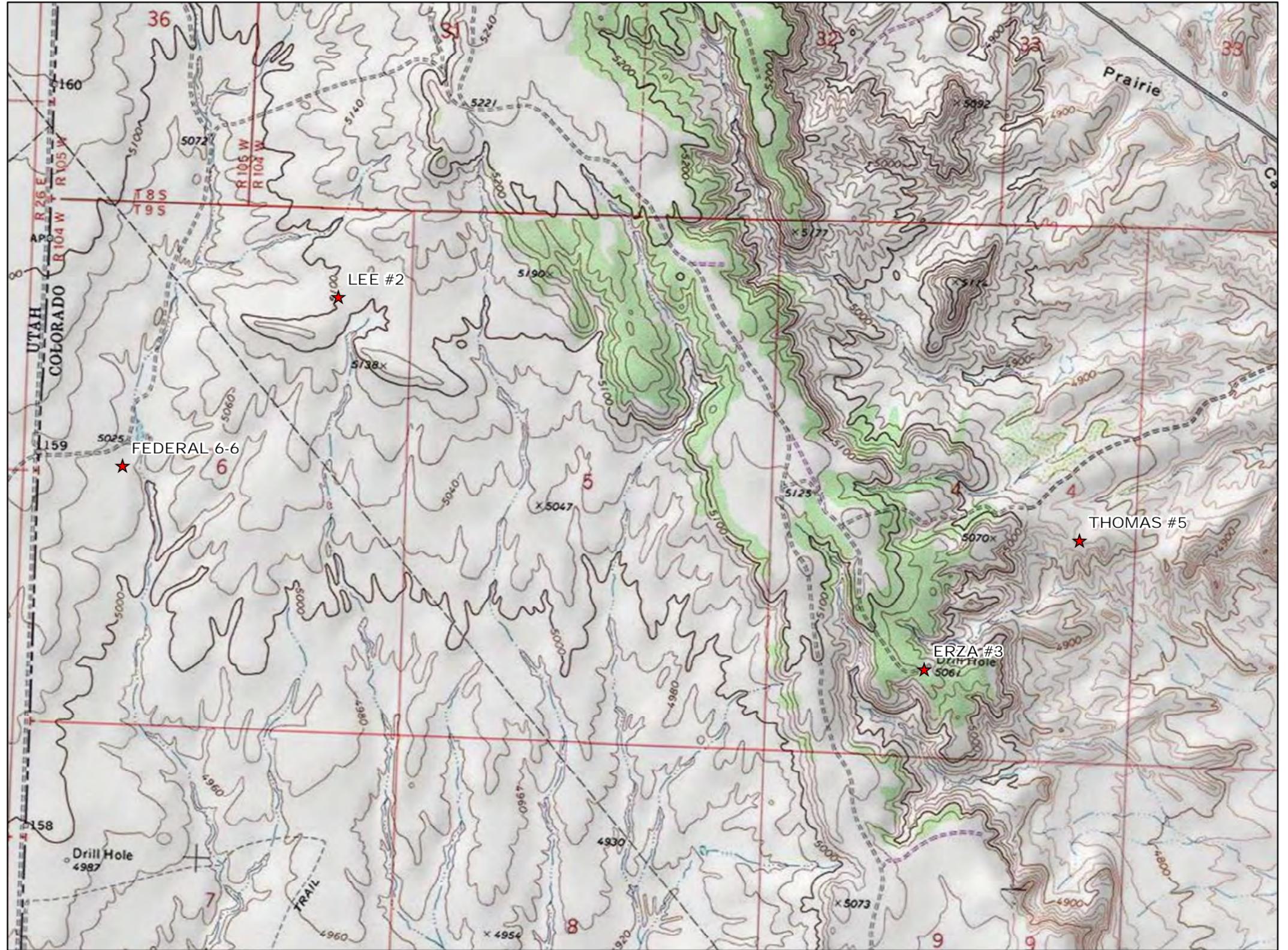
Section 4, Township 9 S Range 104 W
6th Principal Meridian
Mesa Co., Colorado

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0 750 1,500 3,000 4,500 6,000 Feet

MESA COUNTY AERIAL MAP

Southwest Energy Ventures

-- Overview Map--

-- Figure 1--

Southwest Energy Ventures

Mesa County, CO



Sheet No.

SEV_overview
-11_0406MW.mxd

RECORDING

Cartography By: MJW

Checked by: MP

Date: 29 Sep. 2011 Time: 1630



VICINITY MAP

0 2.5 5 10 15 20 Miles

Legend

- ★ Proposed Wellhead
- Proposed Wellpad
- ~ Proposed Pipeline
- ~ Proposed Access



Section 4, Township 9 S Range 104 W
6th Principal Meridian
Mesa Co., Colorado

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0 200 400 800 1,200 1,600 Feet

Mesa County Aerial Map

Federal 6-6
Southwest Energy Ventures
-- Overview Map--
-- Figure 2--

Southwest Energy Ventures
Mesa County, CO



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VICINITY MAP

0 2.5 5 10 15 20 Miles

Legend

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Section 4, Township 9 S Range 104 W
6th Principal Meridian
Mesa Co., Colorado

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0 32,500 65,000 130,000 195,000 260,000 Feet

Mesa County Aerial Map

Federal 6-6
Southwest Energy Ventures
-- Overview Map--
-- Figure 3--

Southwest Energy Ventures
Mesa County, CO



Sheet No.
SEV_overview
-11_0406MW.mxd

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VICINITY MAP



Legend

- ★ Proposed Wellhead
- Proposed Wellpad
- ~ Proposed Pipeline
- ~ Proposed Access



Section 4, Township 9 S Range 104 W
6th Principal Meridian
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Mesa County Topo Map

Lee #2
Southwest Energy Ventures
-- Overview Map--
--Figure 4--

Southwest Energy Ventures
Mesa County, CO

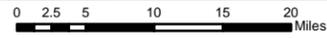


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SEV_overview
-11_0406MW.mxd

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VICINITY MAP



Legend

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- Proposed Wellpad
- ~ Proposed Pipeline
- ~ Proposed Access



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Mesa County Topo Map

Lee #2
Southwest Energy Ventures
-- Overview Map--
--Figure 5--

Southwest Energy Ventures
Mesa County, CO



Sheet No.
SEV_overview
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VICINITY MAP

0 2.5 5 10 15 20 Miles

Legend

- ★ Proposed Wellhead
- Proposed Wellpad
- ~ Proposed Pipeline



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0 32,500 65,000 130,000 195,000 260,000 Feet

Mesa County Topo Map

Ezra #3
Southwest Energy Ventures
-- Overview Map--
-- Figure 6--

Southwest Energy Ventures
Mesa County, CO



Sheet No.
SEV_overview
-11_0406MW.mxd

RECORDING
Cartography By: MJW
Checked by: MP
Date: 29 Sep. 2011 Time: 1060



VICINITY MAP



Legend

- ★ Proposed Wellhead
- Proposed Wellpad
- ~ Proposed Pipeline



Section 4, Township 9 S Range 104 W
6th Principal Meridian
Mesa Co., Colorado

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Mesa County Topo Map

Ezra #3
Southwest Energy Ventures
-- Overview Map--
-- Figure 7--

Southwest Energy Ventures
Mesa County, CO



Sheet No.
SEV_overview
-11_0406MW.mxd

RECORDING
Cartography By: MJW
Checked by: MP
Date: 29 Sep. 2011 Time: 1060



VICINITY MAP

0 2.5 5 10 15 20 Miles

Legend

- ★ Proposed Wellhead
- ☆ Alternate B Wellhead
- Proposed Wellpad
- Alternate B Wellpad
- ~ Proposed Pipeline
- ~ Proposed Access



Section 4, Township 9 S Range 104 W
6th Principal Meridian
Mesa Co., Colorado

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0 162.5 325 650 975 1,300 Feet

Mesa County Aerial Map

Thomas #5
Southwest Energy Ventures
-- Overview Map--
-- Figure 8--

Southwest Energy Ventures
Mesa County, CO



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Cartography By: MJW	
Sheet No. SEV_overview -11_0406MW.mxd	Checked by: MP Date: 29 Sep. 2011 Time: 1630



VICINITY MAP



Legend

- ★ Proposed Wellhead
- ☆ Alternate B Wellhead
- ▭ Proposed Wellpad
- ▭ Alternate B Wellpad
- ~ Proposed Pipeline
- ~ Proposed Access



Section 4, Township 9 S Range 104 W
6th Principal Meridian
Mesa Co., Colorado

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Mesa County Aerial Map

Thomas #5
Southwest Energy Ventures
-- Overview Map--
-- Figure 9--

Southwest Energy Ventures
Mesa County, CO



Sheet No.
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-11_0406MW.mxd

RECORDING
Cartography By: MJW
Checked by: MP
Date: 29 Sep. 2011 Time: 1630

CHAPTER 3 - AFFECTED ENVIRONMENT AND EFFECTS

3.1 INTRODUCTION

This section provides a description of the human and natural environmental resources that could be affected by the Proposed Action and presents comparative analyses of the direct, indirect and cumulative effects on the affected environment that could result from the approval of the Proposed Action and/or other alternatives analyzed. This EA includes information from the Grand Junction Resource Area RMP (BLM 1987).

BLM Manual H-1790-1 (BLM, 1988) lists critical elements that must be addressed in NEPA analyses. These elements include: air quality, Areas of Critical Environmental Concern, cultural resources, environmental justice, farmlands, floodplains, invasive non-native species, migratory birds, Native American religious concerns, threatened and endangered species, wastes, water quality, wetlands/riparian zones, Wild and Scenic Rivers, and designated wilderness. These critical elements, as well as non-critical elements that are within the project area or that may be potentially impacted by the project, are addressed in this chapter. Each element is discussed to a level of detail commensurate with the degree of impact that the Proposed Action and alternatives may have on that critical element.

3.1.1 Elements Not Affected

Pursuant to the CEQ and Part 1502.2, Title 40CFR, only resources of special concern or those resources identified as potentially affected by the proposed action or as resources of special concern are included in the following discussions. No known prime and unique farmlands, Special Designations (ACECs, SMAs, etc.), Wild and Scenic Rivers, Wilderness and Wild Lands, or wild horse and burro occur within the project area. These elements, identified as not being present or not affected, are not brought forward for detailed analysis.

3.1.2 Past, Present, Reasonably Foreseeable Actions

NEPA requires federal agencies to consider the cumulative effects of proposals under their review. Cumulative effects are defined in the Council on Environmental Quality (CEQ) regulations 40 CFR §1508.7 as "...the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency...or person undertakes such other actions."

The CEQ states that "cumulative effects analyses should be conducted on the scale of human communities, landscapes, watersheds, or airsheds" using the concept of "project impact zone" or more simply put, the area that might be affected by the proposed action, and that "It is not practical to analyze the cumulative effects of an action on the universe; the list of environmental effects must focus on those that are truly meaningful. For cumulative effects analysis to help the decision-maker and inform interested parties, it must be limited through scoping to effects that can be evaluated meaningfully. The

boundaries for evaluating cumulative effects should be expanded to the point at which the resource is no longer affected significantly or the effects are no longer of interest to affected parties.”

The area that may be affected by this project includes Sections 3 through 10 and Sections 15 through 22 of Township 09 South, Range 104 West, 6th PM, located within the West Salt Creek watershed—and a larger area considered for air quality affects. To assess past, present, and reasonable foreseeable actions that may occur within the affected area, a review of the following resources was completed: GJFO NEPA log from 2005 to date; GJFO GIS data; the Colorado Oil and Gas Conservation Commission (COGCC) database; and field observations during BLM on-site visits for obvious improvements (range fences, stock pond condition, two track roads, and sign of recreation use).

The GJFO NEPA logs, for the years 2005 through 2011 (to date), were evaluated to determine past, present, and reasonably foreseeable future actions that occurred, are occurring, or are likely to occur in the project area. Reasonably foreseeable future actions in the immediate project area include continued range activities (grazing and impoundment improvements) and scattered oil and gas developments. The following past and present actions were determined to occur in the project area.

Table 3: Past, Present and Reasonably Foreseeable Future Actions within the Action Area (GJFO NEPA Log)

Project Number	Project Title	Location in Area	NEPA Completion Date/Action Period
CO-130-2005-062-EA	San Arroyo Grazing Permit Renewal	T9S, R104W	8/10/05 /Present
CO-130-2006- 028-EA	USGS Badger Wash Study, Moab USGS Office	Badger Wash West of Mack, Colorado	1970s and 5/23/06 / Present
CO-130-2007-061-CX	Natural Gas Pipeline, Williams Northwest Pipeline	T9S, R104w, Sec. 1, 11, & 22	2007 / Present
DOI-BLMCO-130-2009-0099-CX	4 Road Potholes / Pipeline Locates	6th PM, T. 9 S., R.104 W., Sec. 3	2009 / Past

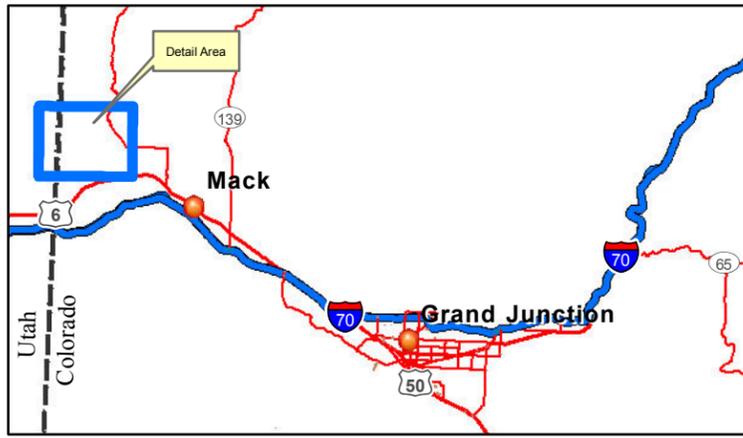
Past Actions:

Primary developments in the sparsely developed project area include Mesa County Roads 1.60, 1.80, 2, 2.80, and 4.0, as well as livestock improvements such as roads, fences, and stock ponds with collection systems. Specifically, a range fence near the Federal #6-6 and Lee #2 divides BLM grazing allotments in the area, and a stock pond is located very near to the proposed Federal #6-6.

Two grazing permits are located within the proposed project area. The Federal #6-6 and the Lee #2 are located on the Bar-X Grazing permit. The Ezra #3 and Thomas #5 are located on the San Arroyo grazing permit. Both of these grazing permits are managed by the Moab Field Office. The San Arroyo grazing permit was renewed in 2005 (CO-130-2005-062-EA). According to David Williams, the Rangeland Management Specialist at the Moab field office the EA for the Bar-X Grazing Permit has expired. The grazing

permit would continue under the same conditions under a temporary rider until a new EA is written. The EA to renew this permit is expected to be done next year.

Within the area that may be affected and adjacent sections to the north, the COGCC (2011) shows thirteen (13) well permits as plugged and abandoned or drilled and abandoned between 1901 and 1999. One (1) is shown as an abandoned location (permitted but never drilled). (COGCC 2011)



VICINITY MAP

0 2.5 5 10 15 20 Miles



Legend

- ★ SEV Wells
- ▭ Project Area

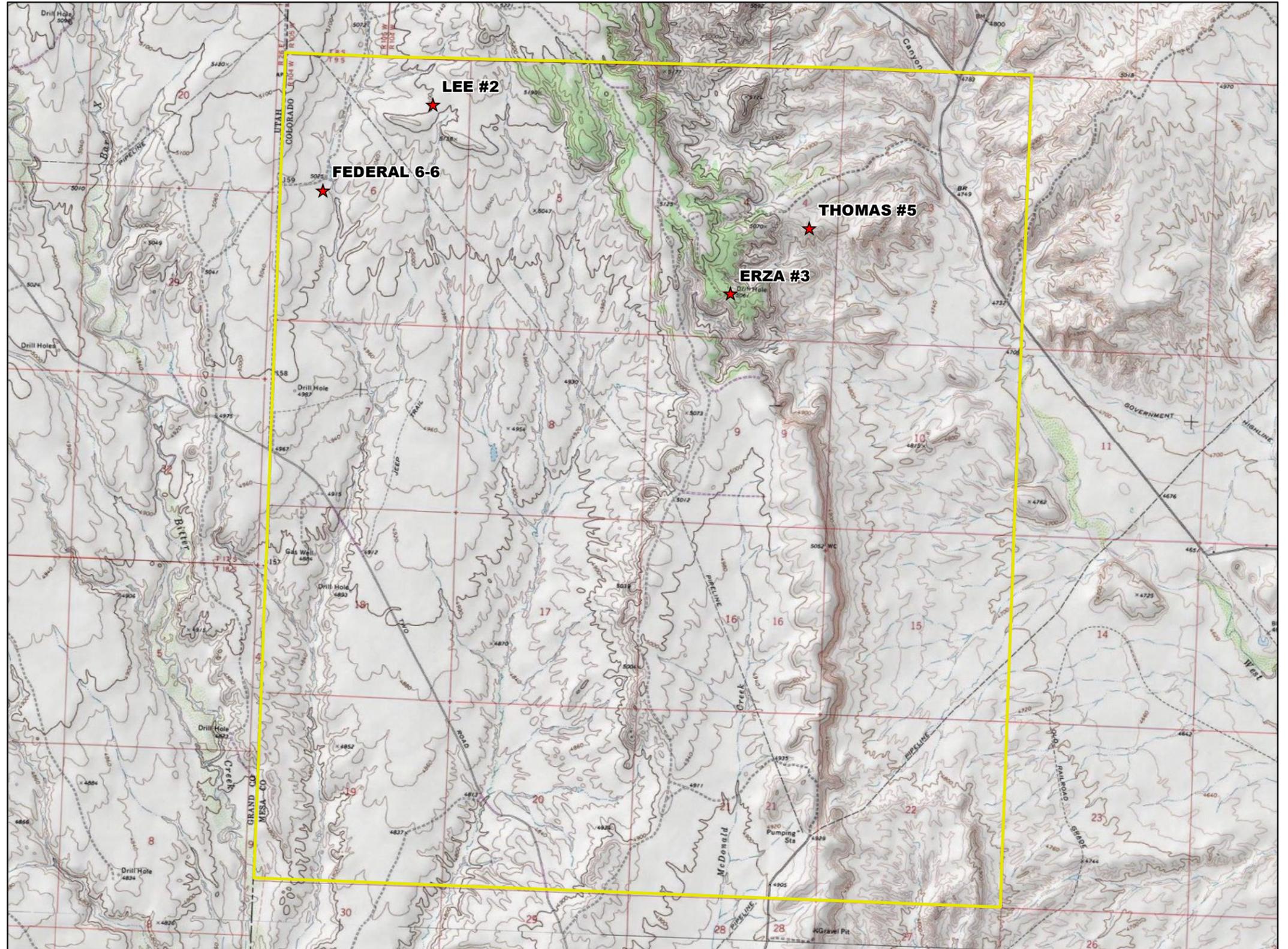
Section 4, Township 9 S Range 104 W
6th Principal Meridian
Mesa Co., Colorado

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0 1,450 2,900 5,800 8,700 11,600 Feet

MESA COUNTY TOPOGRAPHIC MAP

Southwest Energy Ventures

-- Figure 10 --

Southwest Energy Ventures

Mesa County, CO



"Dedicating resources to tomorrow's environment for today's industry."

Sheet No.

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Cartography By: MJW

Checked by: MP

Date: 9 Jan. 2012 Time: 1145

Present Actions:

Signs of public use (e.g., trash) indicate recreation is a present use of the area (e.g., mountain biking, OHV use, hunting and shooting).

Grazing is actively occurring within the Bar-X and San Arroyo grazing permit areas.

Four (4) existing well permits are within the area that may be affected and adjacent sections to the north. Of those four (4) permits; two (2) are producing (Lone Mountain Production CO and D&G Roustabout Service) and two (2) are shut in (Not producing but exist with on-site equipment capable of producing). (COGCC 2011)

Seven pipeline Rights of Way are within the area that may be affected and adjacent sections to the north. Two (2) pipelines are owned by Mid-America Pipeline Company, three (3) pipelines are owned by ETC Canyon Pipeline LLC., one (1) pipeline is owned by Lone Mountain Production Company and one (1) is owned by enterprise Gas Processing LLC.

Reasonable Foreseeable Actions:

If the proposed wells prove to be economical, more oil and gas activity could occur in the area. This activity may occur even if the Four Proposed Desert Wells are not developed.

Oil and gas exploration and development continue to occur throughout western Colorado and eastern Utah. Projects noted in the NEPA log for GJFO include the Whitewater Unit proposed Master Development Plan (MDP) in the Grand Mesa Slopes area southeast of Grand Junction; Encana Oil and Gas (USA) continues to develop their large MDP to the northeast of Grand Junction; Black Hills is developing a newq exploration plan in the DeBeque area and numerous small operators continue to operate and occasionally drill across the project region, mostly to the north. These account for most of the activity and truck traffic on BLM lands across the area.

A new Garr Mesa pipeline project is proposed for the area east of 139 and East Salt Creek (east of the project area).

A pipeline expansion, the Western Expansion Project II, is proposed across about 26 miles of the GJFO, in the northwestern Mesa and southeastern Garfield Counties.

Livestock grazing on BLM allotments is expected to continue across the project area, as well as continued recreational uses.

These past, present and reasonably foreseeable actions were considered when analyzing cumulative effects in sections 3.2, 3.3, 3.4, and 3.5 below.

3.2 PHYSICAL RESOURCES

The following describes the resources present in the area, direct and indirect effects of the project on those resources, cumulative effects where project impacts may incrementally add to other foreseeable actions, and proposed mitigation measures.

3.2.1 Air Quality and Climate

Current Conditions

Air Quality: Air quality in the project area is typical of undeveloped regions in the western United States. No designated Class I Airsheds are located within Mesa County. The closest Class I Airsheds are, more than 50 miles away. These are the Flat Tops and Maroon Bells Wilderness Areas, and the designated wilderness portion of Black Canyon National Park. The State of Colorado also limits the incremental amount of SO₂ allowed in Dinosaur and Colorado National Monuments.

The EPA General Conformity regulations require that an analysis (as well as a possible formal conformity determination) be performed for federally sponsored or funded actions in non-attainment areas and in designated maintenance areas when the total direct and indirect net air pollutant emissions (or their precursors) exceed specified levels. Since the GJFO is not within a non-attainment or a maintenance area, the Clean Air Act conformity regulations do not apply.

The primary sources of air pollutants in the region are fugitive dust from the desert surrounding the planning area, unpaved roads and streets, seasonal sanding for winter travel, motor vehicles, and wood-burning stove emissions. Seasonal wildfires throughout the western U. S. may also contribute to air pollutants and regional haze. The ambient pollutant levels are usually near or below measurable limits, except for high short-term increases in particulate matter (PM₁₀) levels (primarily wind-blown dust), ozone, and carbon monoxide. Within the Rocky Mountain region, occasional peak ozone levels are relatively high, but are of unknown origin. Elevated concentrations may be the result of long-range transport from urban areas, subsidence of stratospheric ozone or photochemical reactions with natural hydrocarbons. Occasional peak concentrations of CO and SO₂ may be found in the immediate vicinity of combustion equipment. Locations vulnerable to decreasing air quality include the immediate areas around mining and farm tilling, local population centers, and distant areas affected by long-range transportation of pollutants. Representative monitoring of air quality in the general area indicates that the existing air quality is well within acceptable standards.

Climate: The climate of the project area is typical of western Colorado, where elevation and topography are dominant controls of local climates. Precipitation is less and temperatures are warmer near the Colorado and Utah border, where the project is located, than in other areas of Colorado. Winter temperatures are at times colder in this area of Colorado, than in Colorado's front-range, but winter temperatures are also less variable. In winter, temperatures may fall to below zero degrees Fahrenheit, but in the valleys of the area winters are typically mild with lots of sunshine. Winter temperatures rarely fall below negative ten degrees Fahrenheit. Summer temperatures in the region can be quite

warm, and if below 5,500 feet, can exceed 100 degrees Fahrenheit multiple times each summer. Precipitation in the area is more evenly distributed throughout the year than it is in the eastern plains of Colorado. The average annual precipitation is 8 to 14 inches, with more precipitation occurring in winter and the least occurring in June. Although a dryer climate, localized flood-producing storms can occur (Doesken 2003).

No Action

Direct and Indirect Effects:

Under the No Action Alternative, the proposed action would not be implemented and changes to air quality and climate would not occur.

Cumulative Effects:

As no direct or indirect changes to air quality and climate would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

The Proposed Action would result in minimal release of pollutants such as fugitive dust, NOX, CO, or HCs from operation of construction, drilling, and reclamation equipment. In the event that wells at the proposed facility require pumping units, those pumping units would result in a minimal release of the pollutants mentioned above for as long as the wells require the pumping units. Fugitive dust following disturbing activities would likely be limited to wind events—and greatly reduced through the operational life of the wells. Erosion control measures including successful re-vegetation would reduce the probability for wind generated fugitive dust.

Cumulative Effects:

Climate and air quality related actions fall under existing regulatory requirements as well as permit conditions, as applicable. No significant cumulative impacts are likely from the proposed action to air quality and climate.

Protective/Mitigation Measures

Dust would be controlled on the roads and locations during construction and drilling by the periodic watering of the roads and locations or the application of various dust agents, surfactants and road surfacing material. Dust agents and surfactants (except water) would require pre-approval before use on BLM lands.

Alternative B

Direct and Indirect Effects:

Types of impacts to air quality experienced from Alternative B would be the same as those experienced under Alternative A. Activities associated with drilling and completion and well operation phases would be the same under both action alternatives for all wells. However, it is conceivable that for the Thomas #5, air quality impacts could be reduced because equipment engines would not be run as long during project phases because the alternative results in a smaller area of impact. The potential emissions reductions are unknown and therefore non-quantifiable. These phases would remain equal for the

remaining three wells. From an action-wide scale the reduction of emissions under Alternative B may be discountable.

Cumulative Effects:

Climate and air quality related actions fall under existing regulatory requirements as well as permit conditions, as applicable. No significant cumulative impacts to air quality and climate are likely from the Alternative B.

Protective/Mitigation Measures

Dust would be controlled on the roads and locations during construction and drilling by the periodic watering of the roads and locations or the application of various dust agents, surfactants and road surfacing material. Dust agents and surfactants (except water) would require pre-approval before use on BLM lands.

3.2.2 Topography and Geologic Resources

Current Conditions

The proposed project area is within the Colorado Plateau physiographic province. The project area falls over rolling semi-arid flats and mesa canyons and escarpments between West Salt Creek to the east and Bar X Wash to the west. The Book Cliffs flank the area to the north. A narrow mesa dissects this area, running from the north, north-west to the south, south-east. Elevation trends of the region tend to increase to the north and inward toward the mesa. The canyons to the east above Prairie Canyon have more varied topography and those to the west are on a more or less mild south aspect. Elevations range from 5,200 feet on the mesa in the north to 4,800 feet in the south-west.

The Federal #6-6 project site would occur at an elevation of 5,022 feet. It would be on a very flat area that was previously disturbed by a pre-existing well pad and moderate to heavy livestock grazing. The Lee #2 is proposed on an alluvial apron of the central mesa's west escarpment slope, 5,101 feet in elevation. Several drainages occur on the apron and locally influence the topography. The Thomas #5 would be at an elevation of 4,938 feet and on an erosive slope. The area buffering the Thomas #5 project site from surrounding habitats is described as mainly steep hillsides and canyons, unsuitable for further active work and disturbance. The Ezra #3 project site occurs at an elevation of 5,079 feet and at the east edge of the central mesa. The area buffering the project site from the surrounding habitats is described as mainly steep hillsides and canyons, unsuitable for further active work and disturbance.

The 4 wells would be drilling into the Morrison formation and possibly the Entrada (below the Morrison formation). The geological layers likely to be encountered from top to bottom of the well bores include the Mancos Shale and the potential gas producing formations—the Dakota, Cedar Mountain (a.k.a. Burro Canyon), Morrison, and Entrada.

The surficial geology of the Thomas #5, Lee #2, and Federal #6-6 project areas is classified as Mancos Shale. This saline Upper Cretaceous geologic layer intertongues complexly with units of the overlying Mesaverde Group or Formation. Lower parts consist of a calcareous Niobrara equivalent and Frontier Sandstone as well as Mowry

Shale Members (Green 1992). The geology of the Ezra #3 project area is classified as older gravels and alluviums from the pre-Bull Lake Age which characterizes Florida, Bridgetimber, and Bayfield gravels in the southwest. The primary rock type is gravel while the secondary rock type is alluviums (Green 1992).

No Action

Direct and Indirect Effects:

Under the No Action Alternative, the proposed action would not be implemented and impacts to topography and geological resources would not occur.

Cumulative Effects:

As no direct or indirect changes to topography and geological resources would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

No prominent topographical features would be removed or disturbed by the proposed action. Direct and localized impacts to 20.73 acres of land affecting topography would occur. Minimal direct impacts to topography would occur from the pipelines because they generally follow natural topography and pre-existing disturbances. After their construction, pre-construction contours would be mostly restored. After the producing life of the wells the sites and access roads are also reclaimed to near pre-construction contours.

No significant impact to geology would result from the Proposed Action. Impact to non-target geologic formations would be prevented by action design features including cementing casings to the surface.

Cumulative Effects:

Topographic impacts are cumulative with other past actions within the project area, including the stock pond near the Federal #6-6 and the regional roadways. Any additional wells in the area would result in incremental disturbances to localized topography within the region.

Protective/Mitigation Measures

- Cement casing would be set from the surface casing to the bottom hole to minimize impacts to geologic layers.

Alternative B

Direct and Indirect Effects:

Alternative B would result in impacts similar in nature to those under the Proposed Action for both topography and geology. Alternative B would reduce direct impacts from the limited and localized topographic alterations by 0.03 acres in relation to the Proposed Action.

Cumulative Effects:

Cumulative effects as a result of Alternative B are identical to those identified under the Proposed Action.

Protective/Mitigation Measures

- Cement casing would be set from the surface casing to the bottom hole to minimize impacts to geologic layers.

3.2.3 Mineral Resources

Current Conditions

The project area is situated at the south-western flank of the Piceance Basin, north and east of the Paradox Basin, falling within the Bar X field. The project area and the surrounding region contain reserves of uranium, coal, gravel, natural gas, and oil shale. Federal lands in the region are important sources of mineral materials for energy production, such as coal, coalbed methane, natural gas, and oil shale. Uranium resources exist within the Morrison Formation and coal resources can be found in the Dakota Formation. However, the Dakota Formation is greater than 2,000 feet below the project area, ranging between 2,092 and 2,517 feet at the proposed wells and the Morrison Formation is greater than 2,100 feet deep and ranges from 2,181 to 2,613 feet deep at the proposed wells.

No Action

Direct and Indirect Effects:

Under the No Action Alternative, the wells would not be drilled and none of the proposed improvements or additions to access roads or pipelines would occur. Therefore no effects to mineral resources would occur.

Cumulative Effects:

As no direct or indirect changes to mineral resources would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

The wells would drill through the surface formations to the underlying target formations and permanently extract gas reserves. The wells would be drilled into the Morrison formation and possibly the Entrada, below the Morrison formation (Section 3.2.2). Completion success and the ability of the wells to produce gas would determine the amount of gas produced by the wells. The production would account for a direct non-recoverable loss of formation reserves. Subsurface coal and uranium resources, if present, are too deep to be economically mined via underground methods, therefore, the project would not affect such potential activities.

Indirectly, production of wells that are at or very near to lease boundaries has the potential to extract mineral resources of neighboring non-communitized/unitized leases. COGCC regulatory orders and administration of the federal mineral estate through On-

Shore Oil and Gas Orders by the BLM are implemented to lessen the chances of off-lease gas production during field development.

Cumulative Effects:

The non-recoverable loss of gas reserves would be incremental to other production of reserves that may occur in the future within the project area. It would likely continue to increase until the mineral resources are exhausted, they become obsolete or it becomes no longer economical to produce them.

Alternative B

Direct and Indirect Effects:

Alternative B would result in negative impacts similar in nature to those under the Proposed Action. The Thomas #5 location within the Proposed Action was chosen to optimize the potential for recovering downhole reserves within the valid unitized lease. Alternative B presents an alternative Thomas #5 location more than 500 feet distant of the location under the Proposed Action. Therefore, the gas producing capability of this location under Alternative B may be reduced. Subsurface coal and uranium resources, if present, are too deep to be economically mined via underground methods, therefore, the project would not affect such potential activities.

Cumulative Effects:

Cumulative effects as a result of Alternative B are identical to those identified under the Proposed Action.

3.2.4 Soils (includes a finding on Standard 1)

Current Conditions

According to the National Resources Conservation Service's (NRCS) Soil Survey of Mesa County Area, Colorado, the Federal #6-6 project area soils consist of Abra-Barx complex with slopes of 3 to 12 percent. This soil type occurs on alluvial fans and fan terraces. The parent alluvium material of the Abra component is derived from sandstone and/or derived from conglomerate. This component has a saline horizon within 30 inches of the soil surface. The parent alluvium material of the Barx component is derived from sandstone. The Abra-Barx complex soils are well drained with moderately high water movement and the shrink-swell potential is low (NRCS 2011).

The Lee #2 project area soils are described as Silty Saltdesert and consist of a Killpack-Persayo complex. This soil type is present in knoll areas with 3 to 25 percent slopes. Parent materials of this soil type consist of residuum weathered from clayey shale. The depth to a root restrictive layer is 4 to 10 inches for the Persayo portions and 20 to 40 inches for the Killpack portions. These soils are well drained, with moderate shrink-swell potential and low organic matter within the surface horizon (approximately 0 to 1%). The calcium carbonate equivalent within 40 inches of the Killpack portions of the soil does not typically exceed 8 percent. In the Persayo, it does not typically exceed 23 percent. Within 30 inches of the soil surface, the soil has a moderately saline and a slightly sodic horizon. (NRCS 2011). During the Lee #2 site visit, project area soils were characterized as clay loam with small, <1" aggregate. Surrounding the action area, sandy

clay loam soils were found. In the drainages that occur in the eastern portions of the project area, small 1-2” aggregate were found.

The Ezra #3 project area soils consist of a Moffat-kompace complex present in mesa areas of 6 to 35% slopes (NRCS 2011). Parent materials of these soil types consist of eolian deposits over sandstone and shale-derived outwash. These soils are well drained, with low shrink-swell potential and low organic matter within the surface horizon (approximately 1%). During the site visit, Ezra #3 project area soils were further described as sandy clay loam with small 1-2” aggregate. Surrounding the action areas, clay loam and sandy clay soils with small 1-2” aggregate were found. Top soil is shallow to moderate, 2-8 inches.

The Thomas #5 project area soils consist primarily of a leebench, warm-Avalon-complex with 3 to 12% slopes. The soils in the very southern corner of the wellpad, consist of Persayo-Blackston complex with 6 to 45% slopes. (NRCS 2011). Top-soil is shallow, 2-5 inches. Project area soils were further described as sandy clay loam with small 1-2” aggregate during the site visits.

No Action

Direct and Indirect Effects:

Under the No Action Alternative the proposed project would not be implemented and therefore, there would be no impacts from the proposed project.

Cumulative Effects:

As no direct or indirect changes to soil resources would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

Impacts to soils would occur over 13.07 acres of previously undisturbed soils with total soil disturbing activities occurring on 20.73 acres. Over the long-term, compaction of soils within the project area could affect their infiltration capability. Earth moving activities would result in mixing of underlying soil layers, bringing less productive subsoils to the upper soil horizons. Long-term storage of top-soil in piles greater than 4 feet deep could reduce the viability of underlying levels of stored top-soil. Over the moderate term, removal of vegetation would expose soils within disturbance areas, leaving them more susceptible to loss from water, gravity, and wind—particularly on fragile soils, steep slopes and within channels and stream beds. Impacts to soils could be reduced or eliminated by erosion and sediment controls including slope scarification, diversions, mulching, micro-depressions implemented on finished cut and fill slopes, and immediate re-seeding. Fragile soils exist at the Lee #2 and Thomas #5 locations. BMPs should be adapted to specifically address this condition.

Finding on Public Land Health Standard 1 for Upland Soils

Standard 1:

Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes.

Finding: A formal land health assessment of the West Salt Creek area was conducted by BLM in 2008. Results from the 2008 assessment indicate soils are meeting Standard 1 near all of the proposed well sites. With the implementation of action design features, it is expected that Standard 1 would not be affected by the proposed action within the project area.

Cumulative Effects:

Impacts to soils are cumulative with other past actions within the project area, including the stock pond near the Federal #6-6, existing producing, shut-in, and plugged or drilled and abandoned well pads, and the regional roadways. Additional wells in the area would result in incremental disturbances to localized soil impacts within the region.

Protective/Mitigation Measures

- Topsoil would be stripped to a minimum depth of 6" or to the depth of all growth medium above sub-soils. Topsoil would be stripped from the pad center, outward to the edges and bermed with woody and vegetative debris along the pad perimeter. Storage berms should not be deeper than 4 feet to maintain viability. Stored topsoil should be seeded within 48 hours of completed pad construction.
- Compliance with State stormwater management regulations requires planning for stormwater management installing and maintaining site specific adaptive Best Management Practices (BMPs), regular monitoring and reports.
- BMPs should be adapted to specifically address fragile soils at the Lee #2 and Thomas #5.
- Excess soils should be contoured naturally, stabilized and seeded.

Alternative B

Direct and Indirect Effects:

Alternative B would result in impacts similar in nature to those under the Proposed Action to soils. The altered Thomas #5 location under Alternative B would reduce direct impact to soils by 0.03 acres in comparison to the Proposed Action. Also, the altered location would reduce indirect impacts from erosion and sedimentation because it would impact two fewer ephemeral streams than under the Proposed Action.

Finding on Public Land Health Standard 1 for Upland Soils

Standard 1:

Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes.

Finding:

A formal land health assessment of the West Salt Creek area was conducted by BLM in 2008. Results from the 2008 assessment indicate soils are meeting Standard 1 near all of the proposed well sites. With the successful implementation of action design features, it is expected that Standard 1 would not be affected by Alternative B within the project area.

Cumulative Effects:

Cumulative effects to soils as a result of Alternative B are similar to those identified under the Proposed Action.

Protective/Mitigation Measures

- Topsoil would be stripped to a minimum depth of 6” or to the depth of all growth medium above sub-soils. Topsoil would be stripped from the pad center, outward to the edges and bermed with woody and vegetative debris along the pad perimeter. Storage berms should not be deeper than 4 feet to maintain viability. Stored topsoil should be seeded within 48 hours of completed pad construction.
- Compliance with State stormwater management regulations requires planning for stormwater management installing and maintaining site specific adaptive Best Management Practices (BMPs), regular monitoring and reports.
- BMPs should be adapted to specifically address fragile soils at the Lee #2 and Thomas #5.
- Excess soils should be contoured naturally, stabilized and seeded.

3.2.5 Water (surface and ground, floodplains) (includes a finding on Standard 5)

Current Conditions

Surface Water: An assessment of the water quality in the Colorado Plateau, which includes the action area, was published in 2000 by the U.S. Geological Survey (USGS) national Water Quality Assessment Program (NAWQA) (Spahr et al. 2000). Nutrient and suspended sediment concentrations in Colorado Plateau streams are typically greater than concentrations in streams of other Upper Colorado Basin areas.

Surface waters of the project area are limited to braided ephemeral drainage systems. The drainages west of the central mesa trend southward toward Bitter Creek within Utah, and eventually the Colorado River. Drainages occurring to the east of the central mesa flow easterly toward West Salt Creek, 1.7 miles east of the Thomas #5, and into Salt Creek—a primary tributary of the Colorado River. These drainages are more numerous, due to complex topography, than those occurring in the west or atop the central mesa. Pastoral manipulations of the regional drainages exist but are sparse (The Bar-X stock pond and improvements).

The Federal #6-6 and Lee #2 would both be situated within State-identified water quality stream segment 13a of the Lower Colorado River Basin. Water quality stream segment 13a of the Lower Colorado River Basin is defined as; “All tributaries to the Colorado River including wetlands, from a point immediately below the confluence of Roan Creek to the Colorado/Utah border except for the specific listings in Segments 13b through 19.” The State has classified this stream segment as "Use Protected."

The Ezra #3 and Thomas #5 would both be situated within State identified water quality stream segment 13b of the Lower Colorado River Basin. Water quality stream segment 13b of the lower Colorado River basin is defined as “All tributaries to the Colorado River, including wetlands, from the Government Highline Canal Diversion to a point immediately below Salt Creek, and downgradient from the Government Highline Canal,

the Orchard Mesa Canal No. 2, Orchard Mesa Drain, Stub Ditch and the northeast Colorado National Monument boundary”. The State has also classified this stream segment as "Use Protected".

The review requirements in the Antidegradation Rule are not applicable to waters designated as use-protected. For these waters, only the protection specified in each reach would apply. For the above reaches, minimum standards for physical and biological, inorganics and metals are established (Table 4). (CDPHE-WQCC 2011)

Table 4: Stream Classifications and Water Quality Standards for Lower Colorado Basin Stream Segments 13a and 13b (CDPHE, Regulation No. 37).

Stream Segment	Classifications	Numeric Standards					
		Physical and Biological	Inorganic (mg/l)			Metals (µg/l)	
COLCLC13a	<u>Use Protected</u> Aq Life Warm 2 Recreation P Agriculture	T=TVS(WS-II) °C D.O.=5.0 mg/l pH=6.5-9.0 E.Coli=205/100ml	CN=0.2 NO ₂ =10 NO ₃ =100	B=0.75	As(ch)=100(Trec) Cd(ch)=100(Trec) CrIII(ac)=100(Trec) Be(ch)= 100(Trec)	CrVI(ac/ch)=TVS Cu(ac/ch)=TVS Pb(ch)=100(Trec) MN(ch)=200(Trec)	Ni(ch)=200(Trewc) Se(ch)=20(Trec) Zn(ch)=2000(Trec)
COLCLC13b	<u>Use Protected</u> Aq Life Warm 2 Recreation E Agriculture	T=TVS(WS-II) °C D.O.=5.0 mg/l pH=6.5-9.0 E.Coli=126/100ml	NH ₃ (ac/ch)=TVS Cl ₂ (ac)=0.019 Cl ₂ (ch)=0.011 CN=0.005	S=0.002 B=0.75 NO ₂ =0.05 NO ₃ =100	As(ac)=340 As(ch)=100(Trec) Cd(ac/ch)=TVS CrIII(ac)=TVS CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Mn(ac/ch)=TVS Hg(ch)=0.01(tot) Fe(ch)=1000(Trec) Pb(ch)=TVS	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac/ch)=TVS Zn(ac/ch)=TVS

The CDPHE —Integrated Water Quality Monitoring and Assessment Report—2010 update to the 2008 305(b) Report—was reviewed to determine the current status of the assessment and determination of water quality within the project area. The Colorado Integrated Reporting Category (IR) value assigned to the assessment units in the “Status of Water Quality in Colorado – 2010” document was: Segment 13a, IR=2; and Segment 13b, IR=5. In Colorado, many assessed surface waters fall into IR Categories 1, 2, and 3. Colorado has elected to place segments where not all uses have been assessed in IR Category 2. In some cases, a complete assessment of all uses cannot be completed do to the lack of data, but the data that is available indicates that at least some of the uses that were assessed are fully supporting. IR Category 5 indicates that available data and information indicate that at least one classified use is not being supported or is threatened and a TMDL is needed. Segments must be placed in Category 5 when, based on existing and readily available data and/or information, technology-based effluent limitations required by the Clean Water Act (CWA), more stringent effluent limitations, and other pollution control requirements are not sufficient to implement an applicable water quality standard and a TMDL is needed. This category constitutes the Section 303(d) list of waters impaired by a pollutant (CDPHE-WQCC. 2010).

The 2010 CDPHE-WQCC Regulation No. 93 Section 303d List of Impaired Waters and Monitoring and Evaluation List, was reviewed to determine if Lower Colorado River stream segments 13a and 13b were listed. Stream segment 13a was not identified on the 303(d) or Monitoring and Evaluation list. The entire portion of Stream segment 13b was

listed on the 303(d) list for Se (Selenium) impairments, Salt Creek was specifically identified for sediment impairments.

Much of the upland watershed north of the Colorado River is situated on soils derived from Mancos shale. Mancos shale soils have naturally high concentrations of selenium and salts. Excessive erosion and irrigation of Mancos shale soils has been documented to be a major contributor to water quality degradation in other parts of the field office. Most recently (5-28-2010) BLM collected water quality samples in Salt Creek downstream of I-70. Results indicate Se levels to be 5.8 µg/L which is above chronic levels (4.6 µg/L). Studies conducted by the United States Geological Survey (USGS) and the National Irrigation Water Quality Program (NIWQP) indicated primary source areas for selenium in the Colorado River near the Colorado/Utah State line to be the eastern side of the Uncompahgre Valley, and the western one-half of the Grand Valley, where extensive irrigation is located on the Mancos Shale (Gunnison Basin Selenium Task Force, 2009). These findings support the notion that upstream irrigation near the project area would also result in increased Se concentrations to surface water in Salt Creek and eventually the Colorado River.

Contributions of sediment and salinity to the Colorado River system resulting from accelerated soil erosion in upland watersheds is also of concern in the project area. The Colorado River Basin Salinity Control Act (Public Law 93-320) was enacted in June 1974 and amended in 1984 by Public Law 98-569. Public Law 98-569 directs the BLM to develop a comprehensive program for minimizing salt contributions from lands under its management. Colorado's Grand Valley is recognized as the largest non-point source of salinity in the Upper Colorado River Basin.

Groundwater: A review of the USGS Groundwater Atlas of Colorado and the CDWR GIS information indicates the proposed action would be situated adjacent to the boundaries of the Colorado River alluvial aquifer system and west of an alluvial aquifer along West Salt Creek and the Piceance Bed Rock Aquifer east of West Salt Creek. The primary source of groundwater near the project area is contained within shallow, localized, alluvial/colluvial deposits adjacent to stream courses. Alluvial ground water, although relatively insignificant in terms of total volume withdrawn (surface water is primary source), is important for irrigation, public and domestic water supply, and livestock uses (Topper et al., 2003). Surface deposits of alluvium and colluvium are present at the proposed Ezra #3 and Lee #2 sites respectively. The alluvium represents glacial deposits while the colluvium is most likely weathered Mancos Shale.

A search for water wells in proximity to the project area was conducted through the Colorado Division of Water Resources (CDWR) GIS data and the on-line WR PLAT Point of Diversion Query Program through the Utah Division of Water Rights. No wells were identified within Utah. Four water wells recorded with CDWR are located within 1 mile of the Federal #6-6 (Table 5). They range in depth from 23 feet to 26 feet through a restricted alluvial deposit overlying the Mancos Shale more than 4,000 feet south-west of the Federal #6-6 location. CDWR records indicate that the wells were drilled for the U.S. Department of Energy between 1985 and 1987 as monitoring wells and targeted an

aquifer on the alluvium—Mancos Shale interface. No information on static water level or well perforation elevation was available for these wells and therefore, no information on the presence of groundwater.

Table 5: CDWR Water Wells Nearest to the Proposed Project

Nearest Proposed Well	CDWR Permit #	Dir. / Dist.	Elev.	Total Depth	Static Level	Perf. Elev.	Rel Elev.*
Federal #6-6	29374	SSE/7160'	4955'	35'	unk	unk	238'
Federal #6-6	29372	SSE/7780'	4950'	23'	unk	unk	245'
Federal #6-6	29373	SSE/8275'	4955'	33'	unk	unk	240'
Federal #6-6	27873	SSE/8770'	4927'	36'	unk	unk	209'

*Footages indicate the difference in elevation between the Total Depth (TD) of the water well and the bottom of the proposed surface casing shoe for the nearest proposed well. Negative numbers would indicate a water well TD below the gas well casing shoe.

Groundwater is most likely to occur along interfaces of the Mancos Shale and overlying alluvium and colluvium. The canyon drainage adjacent to the Ezra #3 has eroded through the overlying alluvium and has exposed the uppermost layer of the underlying Mancos Shale. No seeps along the alluvium-Mancos Shale interface were observed. Water tables in the immediate project area are generally greater than 6 feet below the soil surface. No sign of perched water tables or depressional wetland habitats indicative of near surface water tables were observed within or surrounding the proposed well projects.

No ground water quality information is known for the proposed project area. However, ground water quality in the project area is anticipated to be similar to the water quality in the nearby West Salt Creek. Its water is characteristically a sodium bicarbonate type high in chlorides with an average specific conductance exceeding 900 µg/cm at 25° C.

Water Rights: A search of the Colorado Decision Support System (CDSS) for regional water rights by section in the project area revealed one existing water right (COC-012310—BLM Colorado State Office) within the SE¼SW¼NW¼ Section 6 T09S R104W, 6th PM—Bar-X Reservoir. The Bar-X Reservoir structure is within the NW¼ of section 6. It was identified as impaired by accumulated sediment through internal scoping and by comments received from CPW.

All water used for the proposed wells would be needed from a treated potable water source. The most probable source and that nearest to the proposed project area is the City of Fruita. This source derives water from the Ute Water Conservancy District. This District (Ute Water) provides municipal and agriculture water, serving over 80,000 people in the Grand Valley between Cameo and the Utah border, including the city of Fruita. Ute Water Rights are decreed for multiple uses including municipal and industrial. Both decrees allow for the proposed project uses. The majority of Ute Water's municipal supply comes from seven (7) surface water rights in the Plateau Creek drainage.

No Action

Direct and Indirect Effects:

Under the No Action Alternative, the proposed project would not occur and it therefore would not impact any waters.

Cumulative Effects:

As no direct or indirect impacts to waters would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

Surface Water: The Thomas #5 location would result in fill to the beginning of a small ephemeral stream. Its access and pipeline would cross two small ephemeral depressions and the pipeline segment along MCR 1.60 RD would cross two larger ephemeral streams going under that road. The Ezra #3 location would be located south and above a drainage canyon. The Federal #6-6 would be located next to an ephemeral stream and below a constructed stock pond (Bar-X Reservoir) and its pipeline would cross three ditches feeding that pond. The Lee #2 access and pipeline would run next to one and cross two ephemeral streams.

Direct impacts may occur to surface water quality due to erosion, sedimentation, and other pollutant contributions into the surrounding streams and stock pond from vegetation clearing, soil disturbance, and well pad activities. Routine maintenance and service visits may deteriorate access roads causing rutting, alterations to natural drainage patterns, accelerated erosion, and elevated sedimentation to drainages. Stream banks and bottoms would be widened and rutted by low water crossings.

Impacts to surface water resources from well operations may result from spills or leaks of petroleum products, fracturing fluids, produced-water, condensate, and leaks from construction and transport vehicles. The potential for impacts is elevated if the constituents are allowed to enter surface water features and to have prolonged infiltration into the soil.

Sediment would be the most common pollutant because of soil loss from access road low water crossings and exposed soils before stabilization and re-vegetation. Mineral properties of affected soils could elevate surface water contaminants to levels exceeding numeric standards. Selenium, salt, and sediment influx to these features is dependent upon storm period, landform type, and the soluble mineral content of the geologic formation.

Impacts to surface water resources would be reduced or eliminated through mandatory interim reclamation and water management design features including Best Management Practices (BMPs) for stormwater, using rock to armor low water crossings, regular road maintenance, and staying off the roads and well pads during muddy conditions.

The proposed action would be required to comply with water quality and quantity protection standards under the Clean Water Act of 1977, and the Safe Drinking Water Act of 1974 as amended (CWA). A Construction General Permit under the Colorado Discharge Pollutant System would be required prior to ground disturbing activities associated with the Proposed Action and would require the implementation of a Stormwater Management Plan. Work in streams resulting in fills would require

authorization under §404 of the CWA including well pad, pipeline, and access road activities. Sites with bulk storage of oil at or above 1320 gallons (31.43 barrels) would be required to implement a Spill Prevention, Countermeasure and Control Plan under Section 112.9 of the Environmental Protection Agency's SPCC Rule.

Groundwater: Drilling, completion, and production of the wells could impact the water quality of shallow and deep groundwater zones. Spills and leaks of contaminants allowed to have prolonged infiltration into soils may affect groundwater. No impact to water wells southwest of the Federal #6-6 are likely because their aquifer targets are more than 200 feet higher than the proposed surface casing for this well and they are all more than 7,000 feet away from the project area. The proposed action would be required to comply with ground water protection standards under the Clean Water Act of 1977, and the Safe Drinking Water Act of 1974 as amended (CWA).

Finding on Public Land Health Standard 5

Standard 5:

The water quality of all water bodies, including ground water where applicable, located on or influenced by BLM lands would achieve or exceed the Water Quality Standards established by the State of Colorado.

Finding: Water quality stream segment 13a of the Lower Colorado River Basin currently meets State water quality standards therefore Public Land Health Standard 5 is also being met. Water quality stream segment 13b of the Lower Colorado River Basin currently does not meet State water quality standards (selenium impairments) and therefore Public land health Standard 5 is not being met in that segment. However, as described above the primary cause for selenium impairments in stream segment 13b is related to irrigation on Mancos shale and not development of natural gas. Therefore, with the successful implementation of action design features, it is expected that Standard 5 would not be affected by the Proposed Action within the project area.

Cumulative Effects:

Impacts to water resources are cumulative with other past actions within the project area, including the constructed stock pond, its associated ditching, existing plugged and abandoned well pads, and the regional roadways. Any additional wells in the area would result in incremental disturbances to localized water resource impacts within the region.

Protective/Mitigation Measures

- Armor low water stream crossings with suitable-sized angular rock (at least 4-5"), including the stream bottom and the approaches.
- Surface runoff on the Lee #2 must remain in the same drainage as the disturbance. Storm water or any other fluids must not flow off of lot 9 into lot 8 and into the drainage basin that provides water to two wildlife/stock ponds in Sections 8 and 20 to the south and east of the proposed pad.

Alternative B

Direct and Indirect Effects:

Impacts to water resources, including water rights, from Alternative B would be similar to those under the Proposed Action. Activities associated with drilling and completion and well operation phases would be the same under both action alternatives for all wells. Both action alternatives at the Thomas #5 result in well pad fills into ephemeral streams. However, Alternative B would result in reduced direct impacts from those under the Proposed Action because the Thomas #5 location would impact less land surface with its access road and pipeline and fewer ephemeral streams. The impacts to water resources, including water rights, would be the same for the remaining three wells.

Finding on Public Land Health Standard 5

Standard 5:

The water quality of all water bodies, including ground water where applicable, located on or influenced by BLM lands would achieve or exceed the Water Quality Standards established by the State of Colorado.

Finding: Water quality stream segment 13a of the Lower Colorado River Basin currently meets State water quality standards therefore Public Land Health Standard 5 is also being met. Water quality stream segment 13b of the Lower Colorado River Basin currently does not meet State water quality standards (selenium impairments) and therefore Public land health Standard 5 is not being met. However, as described in the affected environment the primary cause for selenium impairments in stream segment 13b is related to irrigation on Mancos shale and not development of natural gas. With the successful implementation of action design features, it is expected that Standard 5 would not be affected by Alternative B within the project area.

Cumulative Effects:

The types of cumulative effects to water resources from Alternative B are the same as those identified under the Proposed Action. However, the impacts would be less under alternative B because of the fewer streams affected.

Protective/Mitigation Measures

- Armor low water stream crossings with suitable-sized angular rock (at least 4-5”), including the stream bottom and the approaches.
- Surface runoff on the Lee #2 must remain in the same drainage as the disturbance. Storm water or any other fluids must not flow off of lot 9 into lot 8 and into the drainage basin that provides water to two wildlife/stock ponds in Sections 8 and 20 to the south and east of the proposed pad.

3.3 BIOLOGICAL RESOURCES

3.3.1 Invasive, Non-native Species

Current Conditions

In order to comply with the Colorado Noxious Weed Act, both the State of Colorado and the Mesa County governments identify noxious weed plant species they deem as aggressive non-native invaders that may occur in the state and the county. The State of

Colorado prioritizes noxious species as according to their dispersal within the state. Within this prioritization, level A species rarely occur and require eradication, level B species occur at varying densities within the State and require eradication in certain locations, and level C species occur throughout Colorado and require eradication in certain locations. The Mesa County Weed Management Plan further prioritizes a subset of the State's noxious weed species, as either high priority, medium priority, or low priority, according to the threat of weed dispersal in Mesa County and the potential for successful control. The weed species found within the project area include: downy brome (*Bromus tectorum*), tall tumble mustard (*Sisymbrium altissimum*), prickly Russian thistle (*Salsola iberica*), redstem stork's bill (*Erodium cicutarium*), and various mustard species. Downy brome is identified as a level C species by the State of Colorado.

No Action

Direct and Indirect Effects:

Under the No Action Alternative, the proposed action would not be implemented and changes to invasive, non-native species would not occur.

Cumulative Effects:

As no direct or indirect changes to invasive, non-native species would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

The proposed project would involve the removal of vegetation during construction and well drilling. Weeds common in the area often benefit from and become active in areas of disturbance. Increased vehicular traffic and use of equipment may carry weed seeds into the project area. Both these circumstances increase the likelihood of noxious and invasive weed invasion in the project area. However, oil and gas operations could conceivably result in the beneficial removal and continued control of invasive, non-native species, since the operator would comply with the guidelines of the BLM/Forest Service plan *Noxious Weed Management Plan for Oil and Gas Operators*. Weeds would be inventoried, monitored, treated and annual reports provided to the BLM. The proponent would be required to maintain conditions in compliance with this.

Cheat grass (*Bromus tectorum*) is common across the area and prevalent at the site of the proposed Federal 6-6 well, which has been damaged by livestock grazing. Should a wildland fire occur at this location, dry cheat grass could act as a fine continuous fuel bed, carrying and spreading a range fire. Recent test studies using the herbicide Plateau™ have been conducted on BLM lands in the DeBeque area. The treatment has reduced invasive plant species and erosion and limited further opportunities for noxious weeds to move back in. This treatment would be appropriate for this site and setting. Also, BLM standard COAs informing the operator of responsibility for fire prevention and reporting should be implemented.

Cumulative Effects:

Impacts to invasive, non-native species are cumulative with other past actions within the project area, including current oil and gas operations, plugged and abandoned well pads,

regional roadways, recreational uses of the area and active grazing within the grazing allotment. Proposed increases in human activity in the area could increase the transportation of undesirable species as vehicle and foot traffic carry seeds and spores to new unaffected areas. Weed management in areas where undesirable species occur would be beneficial and help to alleviate cumulative effects that negatively impact native vegetative communities. Any additional oil and gas development in the area would result in incremental impacts to invasive, non-native species in the region.

Protective/Mitigation Measures

- SEV should implement measures to prevent fires
- SEV should regularly monitor and promptly control noxious weeds or other undesirable plant species.
- At the Federal 6-6, cheat grass within 300 feet of areas that will have any disturbance or could be affected by heat-producing equipment (e.g., production facilities, vehicle exhausts) should be treated with Plateau™ herbicide, then seeded with a native perennial grass mix appropriate to the site. Treatment should be done using a spray bar on an ATV or by backpack pump only if slopes exceed 30% or are too rocky to drive. Treatment must be completed between January 1st and February 15, when grass is all germinated but has not yet begun to shoot up and grow.

Alternative B

Direct and Indirect Effects:

The level of impacts to invasive, non-native species expected from Alternative B would be the same as those experienced under the Proposed Action, but with a 0.03 acre reduction in soil disturbance.

Cumulative Effects:

Cumulative effects as a result of Alternative B are similar to those identified under the Proposed Action.

Protective/Mitigation Measures

- SEV should implement measures to prevent fires
- SEV should regularly monitor and promptly control noxious weeds or other undesirable plant species.
- Cheat grass within 300 feet of areas that will have any disturbance or could be affected by heat-producing equipment (e.g., production facilities, vehicle exhausts) shall be treated with Plateau™ herbicide, then seeded with a native perennial grass mix appropriate to the site. Treatment should be done using a spray bar on an ATV or by backpack pump only if slopes exceed 30% or are too rocky to drive. Treatment must be completed between January 1st and February 15, when grass is all germinated but has not yet begun to shoot up and grow.

3.3.2 Sensitive Species

Current Conditions

Thirty-two (32) avian, insect, terrestrial, aquatic, and semi-aquatic species are listed by the BLM and other managing agencies as occurring within the greater GJFO area. From

this list, the species that may occur or have habitat in the project area are the; Great Basin spadefoot (S), Brewer's sparrow (S), ferruginous hawk (S), burrowing owl (S), white-tailed prairie dog (K), big free-tailed bat (S), kit fox (K), midget faded rattlesnake (S), and longnose leopard lizard (K) (Table 6). The remaining 23 BLM Sensitive Terrestrial and Aquatic Wildlife Species are unlikely to occur within the project area due to an absence of appropriate habitats (Table 6).

Breeding Brewer's sparrows are common on mesas and foothills throughout western Colorado and nest in sagebrush habitats such as those within and surrounding the action area. The Ferruginous hawk is known to occur in the region but is not common in the area. They typically nest in isolated trees or small groves of trees and other elevated sites such as rock outcrops, buttes, large shrubs and sometimes on the ground near grassland or shrub steppe habitats. The big free-tailed bat is not common to the area and historically not known to occur in Colorado. However, according to the Colorado Division of Wildlife's website more recent data suggest the presence of breeding colonies in southern Utah and adjacent Colorado. The bat frequents rocky or canyon country and roosts in crevices. Potential habitat does occur within the region but presence of the species is unlikely in the area. The Great Basin spadefoot inhabits piñon-juniper woodlands, sagebrush, and semidesert shrublands. It could occur within temporary washes, intermittent drainages, and an intermittently-filled stock pond 369 feet northwest of the Federal #6-6 well location. The project area is within the range for the midget faded rattlesnake. Generally, midget faded rattlesnake habitat consists of high, cold desert dominated by sagebrush with an abundance of rock outcrops and exposed canyon walls. While sagebrush is preferred by the species, they have been known to occupy habitats where greasewood, juniper, and other woody plants occur secondarily or occasionally as co-dominants or even dominants. Species occurrences at higher altitudes are often more common in juniper woodlands. They tend to be associated with south to southeast facing rock outcrops (Travsky and Beauvais 2004). Individuals may occur in the greater project vicinity surrounding the Ezra #3 and possibly the Thomas #5. However, rock outcrops and exposed canyon walls are not in abundance within the project area, particularly around the Federal #6-6 and Lee #2. The longnose leopard lizard was observed on the previously reclaimed well pad where the Ezra #3 pad is proposed. This lizard inhabits flat shrublands with medium cover of juniper and seems to prefer areas where there is little or no grass cover. The longnose leopard lizard may act as an indicator of healthy, undisturbed shrublands in the arid Southwest (Schorr and Lambert 2006).

The Federal #6-6 and Lee #2 are located in a Lease that includes Stipulation 13EC, to protect seasonal habitat of the Threatened and Endangered black-footed ferret. Prairie dog towns and related sensitive species are present in the area. A white-tailed prairie dog colony is present along the Lee #2 access road and surrounding the Federal #6-6 well pad location, access road and pipeline. Based on casual observation during site visits in 2010 and 2011, the area appears to consist of a large tunnel complex containing pockets of active and inactive areas within the larger complex. The activity across this complex is likely to change over time depending on resource availability. Because prairie dog towns exist, the area surrounding the Federal #6-6 and Lee #2 would contain habitat suitable for

the black-footed ferret. However, no individuals are known to occur, are known to have occurred in the past, or are likely to occur in the future.

White-tailed prairie dog colonies also provide habitat for a variety of other sensitive wildlife species likely to occur in the area, including the burrowing owl and kit fox. Both the burrowing owl and kit fox utilize prairie dog colonies for food and shelter. Kit fox are known to occupy shrub-grasslands intermingling with piñon-juniper woodlands in this region. Kit fox dens are located in loose-textured, well drained soils, such as those described in the Lee #2 and Federal #6-6 area. Kit foxes can dig their own dens but will often expand the burrows of other species including prairie dogs. Additionally, habitat improvement features (artificial underground burrows) have been installed in the vicinity of the project area to help kit fox avoid predation. There have been occasional sightings of kit fox in the area. However, occupancy has not been confirmed in the last few years.

Table 6: Sensitive Terrestrial and Aquatic Wildlife Species

Common Name (<i>Scientific name</i>)	Status* (Colorado Ranking)	Habitat Associations	Potential Occurrence**
Amphibians			
Boreal Toad (<i>Bufo boreas pop.1</i>)	BLM, SE, (S1, G4T1Q)	High elevation pond margins, wet meadows, and riparian areas.	NP
Canyon Treefrog (<i>Hyla arenicolor</i>)	BLM, (S2, G5)	Occurs along intermittent streams in deep, rocky canyons.	NP
Great Basin Spadefoot (<i>Spea intermontana</i>)	BLM, (S3, G5)	Occurs along spring seeps and other permanent and temporary waters.	S
Northern leopard frog (<i>Rana pipiens</i>)	BLM, SC (S3, G5)	Occurs in wet meadows and along marshes, ponds, waterways and water-bodies.	NP
Birds			
American peregrine falcon (<i>Falco peregrinus anatum</i>)	BLM, SC (G4T4/S2B)	Nest in ledges or potholes on cliffs in wooded/forested habitats; Forage over riparian woodlands, coniferous & deciduous forests, shrublands, prairies.	NP
American white pelican (<i>Pelecanus erythrorhynchos</i>)	BLM, (S1B, G3)	Found at large water-bodies, lakes and reservoirs.	NP
Bald eagle (<i>Haliaeetus leucocephalus</i>)	BLM, ST (S1B, S3N, G5)	Nests in forested areas adjacent to large bodies of water.	NP
Brewer's sparrow (<i>Spizella berweri</i>)	BLM	Occur in sagebrush shrublands and semi-desert shrublands. Can also be found at lesser densities in pinyon juniper woodlands, grasslands, or mountain shrublands.	S
Ferruginous hawk (<i>Buteo regalis</i>)	BLM, SC, (S3B, S4N, G4)	Breed in open country, usually prairies, plains and badlands; semidesert grass-shrub, sagebrush-grass & pifon-juniper plant associations.	S
Gunnison sage-grouse (<i>Centrocercus minimus</i>)	FC, BLM, SC (S1, G1)	Habitats that include large areas of sage and include a diversity of grasses and forbs and nearby riparian habitats. Range within south central Colorado.	NS
Greater sage-grouse (<i>Centrocercus urophasianus</i>)	BLM, SC, (S4, G4)	Open sagebrush flats or rolling sagebrush hills at altitudes of 6000 to 8500 feet. Known to occur in Mesa County	NS

Long-billed curlew (<i>Numenius americanus</i>)	BLM, SC, (S2B, G5)	Shortgrass and mixed-grass prairies. Nesting in these habitats, close to standing water.	NP
Burrowing Owl (<i>Athene cunicularia</i>)	BLM, ST (S4B, G4)	Open grasslands or desert scrub. Presence of suitable nest burrow is critical prerequisite (often prairie dog burrows).	S
Northern goshawk (<i>Accipter gentiles</i>)	BLM, (S3B, G5)	Coniferous, deciduous or mixed forests.	NP
Western yellow-billed cuckoo (<i>Coccyzus americanus occidentalis</i>)	FC, BLM, SC, (SVA, G5T3Q)	Breeds in riparian woodlands with dense, understory vegetation.	NP
Western snowy plover (<i>Charadrius alexandrinus</i>)	FT, BLM, SC, (S1B, G4T3)	Sandy shorelines of reservoirs and river bends.	NP
White-faced ibis (<i>Plegadis chihi</i>)	BLM, (S2B, G5)	Shorelines along ponds and lakes. Can also be found in mudflats, marshes, wet meadows and flooded agricultural fields.	NP
MAMMALS			
Townsend's big-eared bat (<i>Corynorhinus townsendii pallescens</i>)	BLM, SC (S2, G4T4)	Roosts in mines, caves and structures in woodlands and forests at elevations above 9,500 feet.	NP
White-tailed prairie dog (<i>Cynomys leucurus</i>)	BLM, (S4, G4)	Most often found in semi-desert shrublands, but occur in open shrublands, semi-desert grasslands, mountain valleys, and agricultural fields.	K
Spotted bat (<i>Euderma maculatum</i>)	BLM, (S2, G4)	Found in canyons and in ponderosa pine, pinyon-juniper woodlands and shrub desert habitats.	NP
Fringed myotis (<i>Myotis thysanodes</i>)	BLM, (S3, G4G5)	Occurs in coniferous forests and woodland habitats of ponderosa pine, pinyon, juniper, greasewood, saltbush and scrub oak. Known to roost in rock crevices, caves, mines, buildings and trees.	NP
Big free-tailed bat (<i>Nyctinomops macrotis</i>)	BLM, (S1, G5)	Occurs in rocky or canyon areas.	S
Desert bighorn sheep (<i>Ovis canadensis nelsoni</i>)	BLM	Introduced near Colorado National Monument in 1979. Occur in high mountain terrain dominated by grass, low shrubs, and rock cover.	NP
Kit fox (<i>Vulpes macrotis</i>)	BLM, SE, (S1, G4)	Occur in semi-desert shrub lands of saltbrush, shadscale and greasewood in an area that extends from Montrose to Grand Junction.	K (known to occur in greater area and within artificial denning area)

FISH			
Bluehead sucker (<i>Catostomus discobolus</i>)	BLM	Moderate to fast flowing water with rock substrates.	NP
Flannelmouth sucker (<i>Catostomas latipinnis</i>)	BLM, (S3, G3G4)	Found in large rivers, and often occur in deep pools of slow-flowing, low gradient reaches.	NP
Roundtail chub (<i>Gila robusta</i>)	BLM, SC (S2, G3)	Stream habitats with complex riffle and pool habitats.	NP
Colorado River cutthroat trout (<i>Oncorhynchus clarki pleuriticus</i>)	BLM, SC, (S3, G4T3)	Alpine streams with cold, clear water, relatively steep gradients, and rubble-boulder substrates	NP
REPTILES			
Midget faded rattlesnake (<i>Crotalus viridis concolor</i>)	BLM, SC, (S3, G5T4)	High, cold desert with an abundance of rocky outcrops and exposed canyon walls, where sagebrush occurs along with Greasewood, juniper, and other woody plants.	S
Longnose leopard lizard (<i>Gambelia wislizenii</i>)	BLM, SC (S1, G5)	Semidesert shrublands in valleys and on low mesas where the ground is bare or sparsely vegetated between shrubs.	K
Milk snake (<i>Lampropeltis triangulum taylori</i>)	BLM	Rather varied habitats that include open foothill stands of ponderosa pine with Gambel oak, piñon-juniper woodlands, shortgrass prairie, sandhills, shrubby hillsides, canyons, arid river valleys, and abandoned mines.	NP
INVERTEBRATES			
Butterfly, Great Basin silverspot (<i>Speyeria Nokomis Nokomis</i>)	BLM, (S1, G3T1)	Wetlands associated with flowing water, within an arid climate.	NP
Status* BLM = BLM Special Management Species FC = Federal Candidate SE = State of CO Endangered ST = State of CO Threatened SC= State of CO Candidate	Presence** K = Known, documented observation within project area. S = Habitat suitable and species suspected to occur within the project area. NS = Habitat suitable but species is not suspected to occur within the project area. NP = Habitat not present and species unlikely to occur within the project area.		

Twenty-five (25) rare plant species are listed and managed by the GJFO (Table 7). Based on project area review and habitat availability five (5) of these special status species may occur within the project area; Jones' bluestar (*Amsonia jonesii*), Grand Junction suncup (*Camissonia eastwoodiae*), Osterhout's cryptantha (*Cryptantha osterhoutii*, *Oreocarya osterhoutii*), Grand buckwheat (*Eriogonum contortum*), and Dolores River skeletonplant (*Lygodesmia doloresensis*).

The Ezra #3, Federal #6-6, Lee #2 and Thomas #5 locations were surveyed for rare plant species on July 22nd, 2010; July 29th, 2010; July 23rd, 2010 and May 16th 2011; and May 5, May 16th, and June 4th, 2011 respectively. No rare plant species were observed within areas surveyed for the well pads, access roads, and pipeline corridors or within 400-foot buffers from the pad exteriors and 100-foot buffers around the access roads and the pipeline corridors.

Table 7: GJFO Special Status Plant Species

PLANT	COMMON NAME	STATUS*	HABITAT (Information taken from the CHNP unless otherwise noted)	SUITABLE HABITAT WITHIN THE PROPOSED ACTION AREA
<i>Sclerocactus glaucus</i>	Colorado hookless cactus	FT	Rocky hills, mesa slopes, and alluvial benches; in desert shrub communities. Elevation 4500-6000 ft.	No, none of the proposed action is located in potential habitat.
<i>Penstemon debilis</i>	Parachute beardtongue	FT	Sparsely vegetated, south facing, steep slopes, white shale talus of the Parachute Creek Member of the Green River Formation. Soils are a mixture of shale fragments and clay. Elevation 8000-9000 ft.	No, none of the proposed action is located in potential habitat.
<i>Phacelia submutica</i>	DeBeque phacelia	FT	Sparsely vegetated, steep slopes; in chocolate brown or gray clay; on Atwell Gulch and Shire Members of the Wasatch Formation. Soils often have large cracks because of the high shrink-swell potential of the clays. Elevation 4700-6200 ft.	No, none of the proposed action is located in potential habitat.
<i>Aliciella stenothyrsa</i> (<i>Gilia stenothyrsa</i>)	Narrow-stem gilia	S	Silty to gravelly loam soils derived from the Green River or Uinta Formations. In grassland, sagebrush, mountain-mahogany, or pinyon-juniper communities. Elevation 5000-6000 ft.	No, none of the proposed action is located in potential habitat.
<i>Amsonia jonesii</i>	Jones' bluestar	S	Dry, open areas with clay, sandy, or gravelly soils, in desert-steppe, rocky gorges and canyons. Elevation 4500-5000 ft.	Habitat may occur in project area.
<i>Astragalus debequaeus</i>	DeBeque milkvetch	S	Varicolored, fine textured, seleniferous, saline soils of the Wasatch Formation-Atwell Gulch Member. Barren outcrops of dark clay interspersed with lenses of sandstone. Elevation 5100-6400 ft.	No, none of the proposed action is located in potential habitat.
<i>Astragalus equisolensis</i>	Horseshoe milkvetch	S	Desert shrub communities on river terraces, cracks and crevices overlying the Duchesne River Formation with sandy-gravelly or sandy-silty-soils. Elevation 4600-5200 ft.	No, none of the proposed action is located in potential habitat.

PLANT	COMMON NAME	STATUS*	HABITAT (Information taken from the CHNP unless otherwise noted)	SUITABLE HABITAT WITHIN THE PROPOSED ACTION AREA
<i>A. linifolius</i>	Grand Junction milkvetch	S	Grows on the Chinle and Morrison Formations, with pinyon-juniper and sagebrush. Elevation 4800-6200 ft.	No, none of the proposed action is located in potential habitat.
<i>A. musiniensis</i>	Ferrons' milkvetch	S	Gullied bluffs, knolls, benches, and open hillsides; in pinyon-juniper woodlands or desert shrub communities, mostly on shale, sandstone, or alluvium derived from them. Elevation 4700-7000 ft.	No, none of the proposed action is located in potential habitat.
<i>A. naturitensis</i>	Naturita milkvetch	S	Sandstone mesas, ledges, crevices, and slopes in pinyon-juniper woodlands. Elevations 5000-7000 ft.	No, none of the proposed action is located in potential habitat.
<i>A. piscator</i>	Fisher milkvetch	S	Sandy, sometimes gypsiferous soils of valley benches and gullied foothills. Elevation 4300-5600 ft.	No, none of the proposed action is located in potential habitat.
<i>A. rafaensis</i>	San Rafael milkvetch	S	Gullied hills, washes, and talus under-cliffs; in seleniferous clay, silty, or sandy soils. Elevation 4400-6500 ft. *Source: USFWS	No, none of the proposed action is located in potential habitat.
<i>Camissonia eastwoodiae</i>	Grand Junction suncup	S	Clay flats, on gray alkaline marine-deposited gumbo, and in sandy draws. Elevation 4000-5500 feet. *Source: Smith et al.	Habitat may occur in project area.
<i>Cryptantha gypsophila</i>	Gypsum Valley cateye	S	Gypsum outcrops of the Paradox Member of the Hermosa Formation. Elevation 5400-6300 ft. *Source: J. Reveal, 2006	No, none of the proposed action is located in potential habitat.
<i>Cryptantha osterhoutii</i> (<i>Oreocarya osterhoutii</i>)	Osterhout's cryptantha	S	Dry, barren sites, in reddish-purple decomposed sandstone. Elevation 4500-6100 ft.	No, none of the proposed action is located in potential habitat.
<i>Erigeron kachinensis</i>	Kachina fleabane	S	Saline soils in alcoves and seeps in canyon walls. Elevation 4800-56600 ft.	No, none of the proposed action is located in potential habitat.
<i>Eriogonum contortum</i>	Grand buckwheat	S	Mancos Shale Badlands, with shadscale and other salt desert shrub communities. Elevation 4500-5100 ft.	Yes, potential habitat is in the proposed action area.

PLANT	COMMON NAME	STATUS*	HABITAT (Information taken from the CHNP unless otherwise noted)	SUITABLE HABITAT WITHIN THE PROPOSED ACTION AREA
<i>Frasera paniculatum</i>	Tufted frasera	S	Dry, often sandy habitats, in desert shrub and pinyon-juniper communities. Elevation 4000-6500 ft.	No, none of the proposed action is located in potential habitat.
<i>Lesquerella parviflora</i>	Piceance bladderpod	S	Shale outcrops of the Green River Formation, on ledges and slopes of canyons in open areas. Elevation 6200-8600 ft.	No, none of the proposed action is located in potential habitat.
<i>Lomatium latilobum</i>	Canyonlands biscuitroot	S	Pinyon-juniper and desert shrub communities; in sandy soils derived from the Entrada Formation or the contact point of the Wingate and Chinle Formations. Elevation 5000-7000 ft	No, none of the proposed action is located in potential habitat.
<i>Lygodesmia doloresensis</i>	Dolores River skeletonplant	S	Reddish purple, sandy alluvium, and colluvium of the Cutler Formation between the canyon walls and the river in juniper, shadscale, and sagebrush communities. Elevation 4000-5500 ft.	No, none of the proposed action is located in potential habitat.
<i>Mentzelia argillosa</i>	Roan cliffs blazingstar	S	Steep eroding talus slopes of shale. Green River Formation. Elevation 5800-9000 ft.	No, none of the proposed action is located in potential habitat.
<i>Mimulus eastwoodii</i>	Eastwood's monkeyflower	S	Shallow caves and steeps on steep canyon walls. Elevation 4700-5800 ft.	No, none of the proposed action is located in potential habitat.
<i>Pediomelum aromaticum</i>	Aromatic Indian breadroot	S	Open pinyon-juniper woodlands, in sandy or adobe hills. Elevation 4800-5700 ft.	No, none of the proposed action is located in potential habitat.
<i>Thalictrum heliophilum</i>	Cathedral Bluff meadow-rue	S	Sparsely vegetated, steep shale talus slopes of the Green River Formation. Elevation 6300-8800 ft.	No, none of the proposed action is located in potential habitat.

* Status of Species

FT – threatened

S – BLM listed special status species

**Habitat for Osterhout's cryptantha and Dolores River skeletonplant was not expected in the project area, but were included as survey focus species.

Migratory Birds: Executive Order 13186 addresses concerns over impacts toward migratory birds and their habitats. Among other directives, the Order directs Executive departments and agencies to take certain actions to further implement the Migratory Bird Treaty Act (MBTA) (916 U.S.C. 703-711). The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC §§ 701-715s, as amended) established protections for migratory birds and their parts (i.e. eggs, nests, and feathers) from “take,” hunting, capture, transport, sale, or purchase. The US Fish and Wildlife Service (USFWS) List of Migratory Birds under the MBTA (50CFR 10.13-October 1, 2010) lists numerous birds in the southwestern US. The USFWS has also designated Birds of Conservation Concern (BOCC) by region which include those species of regional importance listed under the MBTA, those of regional importance, and those species of importance with other federal designations. The project area is within the BOCC Bird Conservation Region 16 (BCR16).

The BCR16 list (2008) includes the following MBTA species as potentially occurring in areas of the Southern Rockies/Colorado Plateau: American bittern, bald eagle, ferruginous hawk, golden eagle, peregrine falcon, prairie falcon, snowy plover, mountain plover, long-billed curlew, yellow-billed cuckoo, flammulated owl, burrowing owl, Lewis's woodpecker, willow flycatcher, gray vireo, pinyon jay, juniper titmouse, veery, Bendire's thrasher, Grace's warbler, Brewer's sparrow, grasshopper sparrow, chestnut-collared longspur, black rosy-finch, brown-capped rosy-finch, and Cassin's finch.

Habitat exists in the project area for the following Birds of Conservation Concern; Brewer's sparrow, prairie falcon, burrowing owl, golden eagle, and ferruginous hawk. Burrowing owl surveys have not been conducted in the project area. However, as white-tailed prairie dog colonies are present at the Federal #6-6 and Lee # 2 sites, habitat for burrowing owls exists at those locations.

Notwithstanding the BCR16 list, a survey of the project area containing suitable nesting habitat occurred on May 4 and 5, 2011 and June 30, 2011 for nests and for raptors. Three nests were identified, one in a juniper near the eastern part of the project area, another in a juniper along an existing access east of the proposed Ezra #3 location and one within a cliff band along a canyon northeast and adjacent to the Ezra #3. The two tree nests are most likely corvid nests based on examination of feathers surrounding the nests, those lodged within the nest, and the nest size, construction, and materials. The third nest located in the cliff band near the Ezra #3 is most likely a raven nest. Suitable nesting habitat for raptors was identified along the Thomas #5 pipeline route and in a cliff band north of the Ezra #3. No raptor nests were identified during the raptor nest survey conducted for these areas on May 4th and 5th, 2011.

No Action

Direct and Indirect Effect:

Under the no action alternative, the proposed project would not occur and no effects to sensitive species or habitats thereof would result from its implementation.

Cumulative Effects:

As no direct or indirect impacts to sensitive species or habitats thereof would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

The proposed action may impact potential and possibly occupied habitat for the Great Basin spadefoot, Brewer's sparrow, Ferruginous hawk, burrowing owl, big free-tailed bat, kit fox, midget faded rattlesnake, and longnose leopard lizard. Due to the prairie dog colony, there is potential for both the burrowing owl and kit fox to occupy the habitat surrounding the Lee #2 and Federal #6-6. Habitat fragmentation from road development is a prime concern related to kit fox conservation. The proposed action would result in the utilization of existing roads as well as the construction of two new roads in the area. The Federal #6-6 would result in 170 feet of new road and the Lee #2 would result in 2,480 feet of new road. The Federal #6-6 well pad would be constructed in an area containing and surrounded by prairie dog burrows. The area was not surveyed for potential kit fox dens or for burrowing owls. The longnosed leopard lizard was identified on the previously reclaimed well pad where the Ezra #3 would be constructed.

Impacts could include reducing the amount of available habitat and displacement of individuals. However, due to the limited size of the project, these impacts are not expected to lead to a decrease in viable populations of these species. The proposed action would impact individual longnosed leopard lizard occupying habitat on the proposed Ezra #3. Impacts would include displacement of individuals, the short term removal of 5.55 acres of habitat and the long term removal of 0.57 acres of habitat. The proposed action would impact active and inactive white-tailed prairie dog burrows and could impact breeding burrowing owls by removing burrows used for nesting or by displacing owls immediately adjacent to the project area. Impacts to white tailed prairie dogs would be limited by avoiding construction activities during the pupping (birthing) season April 1 to July 15. Impacts to burrowing owls would be mitigated by prohibiting construction from March 15 through October 31 or by conducting burrowing owl surveys prior to any disturbance within the nesting period, to confirm absence of the species. In the event a burrowing owl nest site is detected within 150 feet of the construction area, no construction would be allowed to occur from March 15 through October 31 of each year. Kit fox have not been confirmed in the area for many years. However, impacts to individuals that may currently occupy or could occupy the area in the future would be reduced by prohibiting public access from newly constructed roads.

No impacts to rare plant species are likely, as no species were identified within the action area during surveys.

The proposed action could result in impacts to migratory bird habitat, as ground and vegetation disturbances would result from the construction and use of well pads, roads, and pipelines. Impacts to breeding populations of migratory bird species would be unlikely if ground disturbing activities were restricted from occurring during the migratory bird breeding season from May 15 through July 15. Much of the disturbances to previously undisturbed habitat would be short-term and minimal. The Proposed Action would result in the initial removal of 20.73 acres of potential habitat. 4.52 acres of disturbed area would remain unusable after interim reclamation.

Cumulative Effects:

Impacts to sensitive species are cumulative with other past actions within the project area, including active and inactive well pads, regional roadways, area recreational uses, and active use

of the permitted grazing allotment. Proposed increases in human activity in the area could result in the reduction of potential habitat and the displacement of individuals in the area. Any additional well development in the area would result in incremental impacts to sensitive species in the region.

Protective/Mitigation Measures

- New access roads should be limited to the use of authorized personnel and closed to the public.
- Construction activities should occur outside of the pupping season for the white-tailed prairie dog which is April 1 to July 15
- To protect burrowing owls, construction should not occur between March 15 and October 31.
 - If the operator proposes to construct during this timing limitation frame, burrowing owl surveys must first be conducted to confirm absence of the species prior to construction or any disturbance. Should burrowing owl nest sites be detected within 150 feet of the construction area, no construction or human encroachment may occur between March 15 and October 31.
 - Burrowing owl surveys shall be conducted by a BLM approved wildlife biologist. Approval of a biological surveyor and notification of the operator's intent to survey shall be provided to the BLM field office biologist at least a week prior to the intended survey start date. Surveys would be conducted according to CDOW established protocols which are available through the BLM wildlife biologist (please note that a survey to document the absence of burrowing owls requires three visits at least one week apart).
- Stage development and construction activities outside of the prairie dog colonies. Limit all vehicle traffic to roadways only, do not allow off-road travel. Restrict vehicle parking to designated areas-outside of prairie dog colonies.
- Interim and final reclamation should restore prairie dog habitat containing native shrubs, grasses, and forbs appropriate to the ecological site disturbed.
- Any waste water pits should be netted to prevent wildlife from entering the pit.
- Restrict ground disturbing activities from occurring during the migratory bird breeding season from May 15 through July 15.

Alternative B

Direct and Indirect Effects:

Alternative B would move the Thomas #5 well pad about 312 feet closer to the existing road. Impacts to sensitive species would be similar in nature to those that would occur under the Proposed Action. Alternative B would reduce direct impacts at the Thomas #5 well by 0.03 acres of total vegetative habitat relative to the Proposed Action, and leave an existing shallow ephemeral drainage intact to continue to function across the habitat. Fewer disturbances would likely result in less spread of cheatgrass and other weedy species.

Cumulative Effects:

Cumulative effects to sensitive species as a result of Alternative B would be nearly identical to those identified under the Proposed Action.

Protective/Mitigation Measures

- New access roads would be limited to the use of authorized personnel and closed to the public.
- Construction activities would occur outside of the pupping season for the white-tailed prairie dog which is April 1 to July 15
- To protect burrowing owls, construction should not occur between March 15 and October 31.
 - If the operator proposes to construct during this timing limitation frame, burrowing owl surveys must first be conducted to confirm absence of the species prior to construction or any disturbance. Should burrowing owl nest sites be detected within 150 feet of the construction area, no construction or human encroachment may occur between March 15 and October 31.
 - Burrowing owl surveys shall be conducted by a BLM approved wildlife biologist. Approval of a biological surveyor and notification of the operator's intent to survey shall be provided to the BLM field office biologist at least a week prior to the intended survey start date. Surveys would be conducted according to CDOW established protocols which are available through the BLM wildlife biologist (please note that a survey to document the absence of burrowing owls requires three visits at least one week apart).
- Stage development and construction activities outside of the prairie dog colonies. Limit all vehicle traffic to roadways only, do not allow off-road travel. Restrict vehicle parking to designated areas-outside of prairie dog colonies.
- Interim and final reclamation should restore prairie dog habitat containing native shrubs, grasses, and forbs appropriate to the ecological site disturbed.
- Any waste water pits should be netted to prevent wildlife from entering the pit.
- Restrict ground disturbing activities from occurring during the migratory bird breeding season from May 15 through July 15.

3.3.3 Threatened or Endangered Species (includes a finding on Standard 4)

Current conditions:

The following table lists and describes the threatened, endangered and candidate species and habitats known to occur in Mesa County, Colorado. It also provides the determination of species presence in the project area and the supporting rationale for that determination.

Table 8: Federal and State Listed Threatened, Endangered, Candidate, State Special Concern Species Considered

Species	Status	Habitat Requirements	Suitable Habitat Present ?	Warranting Detailed Evaluation ?
BIRDS				
Mexican spotted owl <i>Strix occidentalis lucida</i>	Federal Threatened, State Threatened	Steep canyons with exposed cliffs surrounded by dense, mature ponderosa pine/mixed conifer forest. (USFWS 2004)	NO - No suitable canyons, ponderosa pine/mixed conifer associations in project area.	NO
yellow-billed cuckoo <i>Coccyzus americanus</i>	Federal Candidate	Watercourses w/willows, large gallery cottonwoods. Breeds; large riparian areas. DPS boundary –upper Rio Grande, including Sangre De Christo Mtns; excluding Pecos R.	NO - No watercourses, riparian areas or gallery cottonwoods in immediate project vicinity.	NO
Gunnison sage grouse <i>Centrocercus minimus</i>	Federal Candidate	Successional scrub below 9,800 ft. sw CO; se UT. Sagebrush primary habitat component. Open grass/shrub lek sites. (Young et. al. 2000).	NO - No sagebrush habitat within the species range is located in the project area.	NO
FISH				
Colorado pikeminnow <i>Ptychocheilus Lucius</i>	Federal Endangered	Pools in medium to large rivers. Deep, flowing, rocky or sandy pools.	NO - no suitable water resources in project area. No water depletions would occur within Colorado pikeminnow habitats.	NO
Razorback sucker <i>Xyrauchen texanus</i>	Federal Endangered	Colorado River Basin from WY & CO to Baja CA, Tributaries of the Colorado and San Juan Rivers.	NO - No suitable water resources in project area. No water depletions within Razorback sucker habitats.	NO

Species	Status	Habitat Requirements	Suitable Habitat Present ?	Warranting Detailed Evaluation ?
Humpback chub <i>Gila cypha</i>	Federal Endangered	Colorado River Basin canyons, pools, riffles, rocky runs, rapids and eddies.	NO - No suitable water resources in project area. Not known to occur within Mesa County. No water depletions within Humpback chub habitats.	NO
Bonytail chub <i>Gila elegans</i>	Federal Endangered	Colorado R. Basin in open river habitats of relatively uniform dept and moderate current.	NO - No suitable water resources in project area. Not known to occur within Mesa County. No water depletions within Bonytail chub habitats.	NO
Greenback cutthroat trout <i>(Oncorhynchus clarki stomias)</i>	Federal Threatened	Clear, cold-water habitats with fluctuating flows, well-distributed pools, stable banks, abundant stream cover.	NO - No suitable water resources in project area. No water depletions within Greenback cutthroat trout habitats.	NO
MAMMALS				
Canada lynx <i>Lynx Canadensis</i>	Federal Threatened, State Endangered	Northern coniferous forests; open canopies, rock outcrops. Associated with snowshoe hare habitat.	NO - No mapped or suitable coniferous forest habitat in project area.	NO
Wolverine <i>Gulo gulo</i>	Federal Candidate, State Endangered	Boreal forests in low densities within western U.S. Not known to Colorado (Fitzgerald et al. 1994).	NO - No high elevation spruce-fir or boreal forest habitat in or surrounding the project area.	NO
INSECTS				
Uncompahgre fritillary butterfly <i>Boloria actocnema</i>	Federal Endangered	Known populations associated with large patches of snow willow above 12,400 feet, on northeast-facing slopes.	NO - No patches of snow willow above 12,400 feet.	NO
PLANTS				

Species	Status	Habitat Requirements	Suitable Habitat Present ?	Warranting Detailed Evaluation ?
<i>Phacelia submutica</i> DeBeque phacelia	Federal Threatened	At 4,700 to 6,200 feet on sparsely vegetated and steep slopes in soils of the Atwell Gulch and Shire members of the Wasatch Formation (Spackman et al. 1997).	NO - No suitable soils in project area	Included in rare plant survey. Was not found.
<i>Sclerocactus glaucus</i> Colorado hookless cactus	Federal Threatened	Gravelly soils on south-facing clay hills, saltbrush, sagebrush flats, pinyon-juniper woodland and along alluvial benches within the Gunnison and Colorado Rivers basins	YES	Included in rare plant survey. Was not found.

No Action

Direct and Indirect Effects:

Under the no action alternative, the proposed project would not occur and therefore would not result in effects to threatened and endangered species.

Cumulative Effects:

As no direct or indirect changes to threatened and endangered species would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

Impacts from the project may include habitat fragmentation from long-term disturbances and human activity. No federally threatened, endangered, or candidate species occur in the project area. The DeBeque phacelia and Colorado hookless cactus were included in rare plant surveys of the project area (Section 3.3.2). Neither plant species, nor any other federally listed species, was documented in the project area.

Water obtained for all well's drilling and completion activities would be obtained from Fruita, Colorado—under existing decrees primarily from Plateau Creek (Section 3.2.5). Plateau Creek flows into the Colorado River just above a sensitive aquatic habitat area. This area is specified as the 15-mile reach in the Upper Colorado River Endangered Fish Recovery Program (Recovery Program). Informal consultation with the USFWS indicates that Ute Water has not exceeded their analyzed depletions and that they are current in their mandatory reporting and payments under the Recovery Plan. The USFWS expressed that Ute Water's existing and future depletions have already undergone consultation for the Recovery Program. The one-time use of about 200,000 gallons from this source for the proposed action would not exceed their decreed limits and would therefore not exceed the water right's analyzed depletion.

Finding on Public Land Health Standard 4

Standard 4:

Special status, threatened and endangered species (federal and state), and other plants and animals officially designated by the BLM, and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.

Finding:

Project impacts upon Standard 4 would be minimal with successful interim reclamation and integrated weed management as well as implementation of appropriate timing restrictions and mitigation measures.

Cumulative Effects:

Increases to existing habitat fragmentation and loss would occur as a result of new disturbances from the proposed project. The severity of the fragmentation is relative to the individual sensitive species. These impacts to sensitive species are cumulative with other past actions within the project area, including plugged and abandoned well pads, regional roadways, recreational uses of the area, and active grazing within the grazing permit. Any additional well development in the area would result in incremental impacts to sensitive species in the region.

Alternative B

Direct and Indirect Effects:

Impacts to threatened or endangered species resulting from approval of Alternative B would be similar in nature to those under the Proposed Action. Alternative B would reduce direct impacts from the localized alterations by 0.03 acres of total vegetative habitat, and leave intact two existing shallow ephemeral drainages which would continue to function across the habitat. Less disturbance would likely result in less spread of cheatgrass and other weedy species to degrade habitat.

Finding on Public Land Health Standard 4

Standard 4:

Special status, threatened and endangered species (federal and state), and other plants and animals officially designated by the BLM, and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.

Finding:

Project impacts upon Standard 4 would be minimal with successful interim reclamation and integrated weed management as well as implementation of appropriate timing restrictions and mitigation measures.

Cumulative Effects:

Cumulative effects to threatened or endangered species as a result of Alternative B are similar to those identified under the Proposed Action.

3.3.4 Vegetation (grasslands, forest management) (includes a finding on Standard 3)

Current Conditions, General

Ecological systems found in the greater project area include Inter-Mountain Basins Juniper Savanna, Inter-Mountain Basins Semi-Desert Grassland, and Inter-Mountain Basins Big Sagebrush Steppe.

The Inter-Mountain Basins Juniper Savanna is a widespread ecological system that occupies dry foothills and sandsheets at elevations that range from 1,491 to 7,545 feet. This habitat type occurs in western Colorado, northwestern New Mexico, northern Arizona, Utah, and the Great Basin of Nevada and southern Idaho. It is typically found on lower mountain slopes, hills, plateaus, basins and flats, often where juniper is expanding into semi-desert grasslands and steppe. The vegetation is typically open savanna, with potential inclusions of relatively dense juniper woodlands. This savanna is typically dominated by *Juniperus osteosperma* trees. In the southern Colorado Plateau, *Juniperus monosperma* or juniper hybrids may dominate the tree layer. *Bouteloua gracilis*, *Hesperostipa comata*, and *Pleuraphis jamesii* are the most common species occurring in the high-cover layer of perennial bunch-grasses and forbs. (Natureserv 2011)

The Inter-Mountain Basins Big Sagebrush Steppe is a widespread matrix-forming shrub-steppe ecological system that occurs throughout areas of the Columbia Plateau and northern Great Basin, the Wyoming Basins, central Montana, and the western fringe of the Great Plains in

Montana and South Dakota. This system typically has deep and non-saline soils that have a microphytic crust. This habitat type is dominated by perennial grasses and forbs (>25% cover). The shrub layer is open to moderately dense, with 10 to 40 percent cover. Species often dominating or co-dominating this layer include: *Artemisia tridentata ssp. Tridentata*, *Artemisia tridentata ssp. xericensis*, *Artemisia tridentata ssp. wyomingensis*, *Artemisia tripartita ssp. tripartita* (Snake River valley in Wyoming), *Artemisia cana ssp. cana*, and *Purshia tridentata*. Other species that may be common, especially in disturbed areas, include: *Atriplex confertifolia*, *Chrysothamnus viscidiflorus*, *Ericameria nauseosa*, *Sarcobatus vermiculatus*, *Tetradymia spp.*, or *Artemisia frigida*. *Bromus japonicus* and *Bromus tectorum* are also species that indicate habitat disturbance in this ecosystem. Associated graminoids include: *Achnatherum hymenoides*, *Calamagrostis montanensis*, *Elymus lanceolatus ssp. lanceolatus*, *Koeleria macrantha*, *Poa secunda*, *Pascopyrum smithii*, *Hesperostipa comata*, *Nassella viridula*, *Bouteloua gracilis*, and *Pseudoroegneria spicata*. Important rhizomatous species include *Carex filifolia* and *Carex duriuscula*. *Festuca campestris* and *Festuca idahoensis* are typically uncommon in this system, but *Festuca idahoensis* may occur in areas of higher elevations/precipitation. Common forbs are *Phlox hoodii*, *Arenaria spp.*, *Opuntia spp.*, *Sphaeralcea coccinea*, *Dalea purpurea*, *Liatris punctata*, and *Astragalus spp.* The undisturbed ecosystem would be grassland formed by natural fire regimes that maintain a patchy distribution of shrubs. If fires are suppressed, or if areas are utilized for grazing, shrub presence may increase. (Natureserv 2011) If cheatgrass has shortened the fire return interval, fewer shrubs may result.

The Inter-Mountain Basins Semi-Desert Grasslands occurs on xeric sites at elevations ranging from approximately 4,750 to 7,610 feet. It occurs in a variety of landforms, including swales, playas, mesas, alluvial flats, and plains and can be found covering large areas of intermountain basins or as large patches in mosaics with shrubland systems. When this ecosystem forms mosaics with shrubland systems, those shrublands are usually dominated by *Artemisia tridentata ssp. tridentata*, *Artemisia tridentata ssp. wyomingensis*, *Atriplex spp.*, *Coleogyne spp.*, *Ephedra spp.*, *Gutierrezia sarothrae*, or *Krascheninnikovia lanata*. Substrates are variable and although they are often well-drained sandy or loam soils derived from sedimentary parent materials, they may include fine-textured soils derived from igneous and metamorphic rocks. This grassland ecosystem is considered the driest grassland throughout the intermountain western U.S and dominant species are drought-resistant plants. Dominant or codominant species include: *Achnatherum hymenoides*, *Aristida spp.*, *Bouteloua gracilis*, *Hesperostipa comata*, *Muhlenbergia spp.*, and *Pleuraphis jamesii*. Scattered shrubs and dwarf-shrubs often are present and are: *Artemisia tridentata ssp. tridentata*, *Artemisia tridentata ssp. wyomingensis*, *Atriplex spp.*, *Coleogyne spp.*, *Ephedra spp.*, *Gutierrezia sarothrae*, and *Krascheninnikovia lanata*. (Natureserve 2011)

Current Conditions, Specific

The Federal #6-6 project site is located within an Inter-Mountain Basins Semi-Desert Grassland. It would occur in a previously disturbed area at a plugged and abandoned well pad location where reclamation has largely failed. Vegetation at the site has been affected by the surrounding white-tailed prairie dog colonies and by what appears to have been moderate to heavy livestock grazing. A pasture boundary fence dividing the Bar-X range permit from the San Arroyo range permit runs across the very southern end of the pad. The range conditions on both sides of the fence are similar. The proposed pad area supports a stand of disturbed and degraded annual and

short perennial grassland. Species identified during the June 24, 2010 onsite include: globemallow (*Sphaeralcea coccinea*), cheat grass (*Bromus tectorum*), Russian thistle (*Salsola iberica*), blazing star (*Mentzelia albicaulis*), filaree (*Erodium cicutarium*), crested wheat grass (*Agropyron cristatum*), snakeweed (*Gutierrezia sarothrae*), rose heath (*Leucelene ericoides*), green mustard (*Sisymbrium altissimum*), and stick seed (*Lappula occidentalis*). Dominant species in the area are all considered undesirable and include the following: cheat grass (*Bromus tectorum*), tall tumbledustard (*Sisymbrium altissimum*), and prickly Russian thistle (*Salsola iberica*).

The Lee #2 project site occurs primarily within the Inter-Mountain Basins Big Sagebrush Steppe. The location, pipeline, and access would be situated within a disturbed area mostly clear of sagebrush and occupied by undesirable species. The area also appears to have experienced a relatively heavy level of livestock use. Species identified during the rare plant survey conducted July 23, 2010 and May 16, 2011 include: big sagebrush (*Artemisia tridentata*), fourwing saltbush (*Atriplex canescens*), Indian ricegrass (*Oryzopsis hymenoides*), rose heath (*Leucelene ericoides*), squirreltail (*Sitanion hystrix*), mesa pepperwort (*Lepidium montanum*) shadscale saltbush (*Atriplex confertifolia*), yellow salsify (*Tragopogon dubius*), lambsquarters (*Chenopodium album*), and sharpleaf twinpod (*Physaria acutifolia*). Undesirable species present include prickly Russian thistle (*Salsola iberica*), tall tumble mustard (*Sisymbrium altissimum*), redstem stork's bill (*Erodium cicutarium*), and cheat grass (*Bromus tectorum*). The infestation of these species is notably heavy at the access entry point. Similar patches are also growing north and northeast of the proposed pad area and are moderately scattered throughout the project area. Vegetative species in these disturbed areas are undesirable as forage species for big game like pronghorn antelope, deer and elk. Preferred forage species similar to the surrounding undisturbed area and recommended for reseeding include big sage brush, fringed sage brush, cushion buckwheat, and James' galleta. These species should be considering in the seed mix used for reclamation.

The Ezra #3 project site is located within Inter-Mountain Basins Juniper Savanna and would occur in a previously disturbed area at a plugged and abandoned well pad location where reclamation is largely succeeding. The area appears to have been subject to light to moderate livestock use. The reclaimed area supports a relatively diverse stand of recovering native vegetation fairly typical for an area returning from disturbance conditions. Dominant species include the following desirable species: shadscale saltbrush (*Atriplex confertifolia*), Indian ricegrass (*Oryzopsis hymenoides*), spiny hopsage (*Grayia spinosa*), and Utah juniper (*Juniperus osteosperma*). Dominant undesirable species include cheat grass (*Bromus tectorum*), and various mustard species (*Brassica*). These undesirable species occur in patches and are isolated within the northeast portion of the disturbance area. Additional species noted in the area during the June 24, 2010 onsite include: Russian thistle (*Salsola iberica*), rose heath (*Leucelene ericoides*), green mustard (*Sisymbrium altissimum*), black sagebrush (*Artemisia nova*), Bigelow sage (*Artemisia bigelovii*), two-needle pinyon (*Pinus edulis*), bladder pod (*Lesquerella sp.*), squirreltail (*Sitanion hystrix*), roughseed cryptantha (*Cryptantha flavoculata*), mountain pepperweed (*Lepidium montanum*), desert trumpet (*Eriogonum inflatum*), Gordon's buckwheat (*Eriogonum gordonii*), and cleftleaf wildheliotrope (*Phacelia crenulata*).

The Thomas #5 project site is also located within Inter-Mountain Basins Juniper Savanna and would occur in an area where there is evidence of light livestock use. Specific species present

include cheat grass (*Bromus tectorum*), James' galleta (*Pleuraphis jamesii*), Utah juniper (*Juniperus osteosperma*), big sagebrush (*Artemisia tridentata*), shadscale saltbush (*Atriplex confertifolia*), snakeweed (*Gutierrezia sarothrae*), shortspine horsebrush (*Tetradymia spinosa*), squirreltail (*Sitanion hystrix*), mormon tea (*Ephedra viridis*), desert trumpet (*Eriogonum inflatum*), Bigelow sage (*Artemisia bigelovii*), Indian ricegrass (*Oryzopsis hymenoides*), spiny hopsage (*Grayia spinosa*), plains prickly pear (*Opuntia polyacantha*), desert prince's plume (*Stanleya pinnata*), winterfat (*Krascheninnikovia lanata*), salty milkvetch (*Astragalus lentiginosus var. salinus*), cryptobiotic crust and Gardner's saltbush (*Atriplex gardneri*). Dominant undesirable species include cheat grass (*Bromus tectorum*) and various mustard species (*Brassica*).

No Action

Direct and Indirect Effects:

Under the No Action Alternative, the proposed action would not be implemented and changes to vegetation would not occur.

Cumulative Effects:

As no direct or indirect changes to vegetation would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

Impacts to vegetation would occur to 13.07 acres of previously undisturbed areas with total disturbance of about 20.73 acres. Vegetation would be removed in areas of proposed activities, exposing fragile soils and leaving them more susceptible to loss from water, gravity, and wind—particularly on steep slopes. The Lee #2 pad, pipeline and access were moved at the onsite inspection to an area mostly clear of sagebrush and occupied by more undesirable species than the surrounding areas, to minimize the impacts to the desired vegetation in the area. Impacts to vegetation could be reduced or eliminated by state-of-the-art desert re-vegetation techniques, including: proper topsoil/woody debris salvage and storage (shallow, stable, located as closely as possible to removal site, [i.e., perimeter-bermed]), especially in areas with good native seed banks (e.g. the Ezra #3 and Thomas #5 locations); redistribution of all topsoil at interim reclamation; seedbed preparation such as pocking soils with micro-basins scaled to the site; seeding with tested, certified, weed-free seed; mulching; weed management to BLM and County standards; exclusion of cattle from reclaimed areas; and continuing monitoring and maintenance as required by conditions at the sites.

As noted at the onsite inspection for the proposed Ezra #3 well, the pad would be shaped to avoid impacts to mature juniper trees located at the northeast and northwest corners of the proposed pad. The Lee #2 well pad, pipeline and access road were positioned within an area relatively clear of sagebrush and occupied by a higher level of invasive species in relation to the surrounding area, to reduce the impact to the sagebrush stand. All wells would be fenced upon interim reclamation to increase re-vegetation success by preventing grazing by livestock in the area. Compliance with the stormwater management plans for the proposed action would also help to promote healthy vegetation and habitat on public lands.

Finding on Public Land Health Standard 3

Standard 3:

Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential.

Finding:

Project impacts upon Standard 3 would be beneficial as the design features would result in the management of undesirable and invasive species through successful interim reclamation and integrated weed management. Approximately 50% of the project area is not meeting Standard 3 due to a limited presence of native perennials and excessive amounts of weedy species.

Cumulative Effects:

Impacts to vegetation are cumulative with other past actions within the project area, including plugged and abandoned well pads, regional roadways, recreational uses of the area, and active grazing within the grazing permit. These increases in human activity in the area could decrease the amount and condition of native vegetative cover to new unaffected areas. Weed management in areas where undesirable species occur would be beneficial and help to alleviate cumulative effects that negatively impact vegetative communities. Any additional well development in the area would result in incremental impacts to vegetation in the region.

Protective/Mitigation Measures

- The edge of the Ezra #3 well pad should be routed around old juniper trees located at the NE corner of the pad as marked by stakes, snow fence or flagging
- Interim and final reclamation should restore pronghorn antelope habitat containing native shrubs, grasses, and forbs appropriate to the ecological site disturbed.

Alternative B

Direct and Indirect Effects:

Alternative B would result in impacts similar in nature to those under the Proposed Action to vegetation. Alternative B would reduce direct impacts from the localized alterations by 0.03 acres of total vegetation removed in relation to the Proposed Action.

Finding on Public Land Health Standard 3

Standard 3:

Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential.

Finding:

Project impacts upon Standard 3 would be beneficial as the design features would result in the management of undesirable and invasive species through interim reclamation and integrated weed management. Approximately 50% of the project area is not meeting Standard 3 due to a limited presence native perennials, and excessive amounts of weedy species.

Cumulative Effects:

Cumulative effects to vegetation as a result of Alternative B are identical to those identified under the Proposed Action.

Protective/Mitigation Measures

- The edge of the Ezra #3 well pad should be routed around old juniper trees located at the NE corner of the pad as marked by stakes, snow fence or flagging
- Interim and final reclamation should restore pronghorn antelope habitat containing native shrubs, grasses, and forbs appropriate to the ecological site disturbed.

3.3.5 Wetlands & Riparian Zones (includes a finding on Standard 2)

Current conditions

Field inspection of the proposed action areas and a review of BLM GIS data indicate the proposed action is not located within any riparian or wetlands habitat. Erosion control measures would be implemented to minimize any potential effects of erosion to resources in the larger area. No impacts to local riparian and wetland habitats would occur under the No Action, Proposed Action or Alternative B.

Finding on Public Land Health Standard 2

Standard 2:

Riparian systems associated with both running and standing water function properly and have the ability to recover from major disturbance such as fire, severe grazing, or 100-year floods. Riparian vegetation captures sediment and provides forage, habitat and bio-diversity. Water quality is improved or maintained. Stable soils store and release water slowly.

Finding:

No impacts to Standard 2 are expected as no wetlands or riparian zones occur in the action area.

3.3.6 Wildlife (includes fish, aquatic and terrestrial) (includes a finding on Standard 3)

Current conditions

The project area provides suitable habitat for a variety of wildlife species, including big game, other mammal species, birds, reptiles, and amphibians.

Of the amphibians common to the region, the Bullfrog, northern leopard frog, tiger salamander, western chorus frog, Woodhouse's toad, canyon treefrog, great basin spadefoot, red-spotted toad, New Mexico spadefoot, it is likely only the spadefoot toads could occur in the project area. The others are unlikely to occur in the arid environments within the project area. The stock pond near the Federal #6-6 may provide habitat during prolonged periods of inundation. All streams in the project area are ephemeral, with only occasional seasonal or post precipitation flows. The closest perennial stream is the southern portion of West Salt Creek, approximately 2.9 miles southeast of the Ezra #3 location.

Wildlife species such mountain lion, turkey, black-tailed jackrabbit, desert cottontail, golden-mantled ground squirrel, fox, raccoon and coyotes inhabit the region of the action area. Wildlife in the proposed action area includes a wide variety of mammals, birds and reptiles. A wide variety of songbirds and neo-tropical migratory birds also use the region. Raptors common in the area include red-tailed hawk, golden eagles and American kestrel. The area's common reptiles are the collared lizard, fence lizard, plateau striped whiptail, sagebrush lizard, horned lizard, side-blotched lizard, tree lizard and western whiptail. The area of the proposed action also provides habitat for pronghorn antelope, deer, and elk. The project area is managed as part of

Colorado Parks and Wildlife Game Management Unit 30. There is a large influx of big game yearlong depending on the weather conditions and vegetation. Winter forage and solitude are critical for big game animals during demanding winter months. Pronghorn losses due to predation by coyotes were heavier than normal over the winter of 2010-2011, related to snow depth (Warren, CDOW comment letter 2011). The Federal #6-6 and Lee #2 locations are within a COGCC State Wildlife Habitat (SWH) designated pronghorn Winter Concentration area.

No Action

Direct and Indirect Effects:

Under the no action alternative, the proposed action would not be implemented and impacts to wildlife as a result of the action would not occur.

Cumulative Effects:

As no direct or indirect impacts to wildlife species or habitats thereof would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

Impacts to habitat would occur to 13.07 acres of previously undisturbed areas with total disturbing activities occurring to 20.73 acres. However, only 4.52 acres would remain as long term disturbance following successful interim reclamation. The Lee #2 well pad, pipeline and access were moved following the onsite inspection, to an adjacent area that was mostly free from sagebrush and occupied by less desirable vegetative species. This move reduced the amount of sagebrush habitat for pronghorn antelope that would be removed. Additionally, the revised location would avoid impacts to the drainage in Sections 8 and 20 that provides water to two wildlife/stock ponds. The pipeline and access roads for all four wells would be routed along an existing road as much as possible to further reduce the amount of disturbance to wildlife habitat in the area. Noise generation and increased human activity within the proposed action could result in some temporary displacement of wildlife during the construction, drilling and completion phases of the project. Potentially affected species include the cottontail, black-tailed jackrabbit, pronghorn antelope, mule deer, coyote, and other species that typically utilize local habitats. Habitat in the action area is not unique to the planning area and is common throughout portions of the field office planning area. The proposed project would adhere to conditions of approval and implement BMPs in order to minimize effects to wildlife. To minimize impacts to pronghorn in the area a seasonal timing restriction is recommended from January 1 through March 1. Additionally, new access roads shall be closed to the public, including motorized and non-motorized vehicle travel to reduce impacts are wildlife resources in the area.

Finding on Public Land Health Standard 3

Standard 3:

Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential.

Finding:

Project impacts upon Standard 3 would be minimal after successful interim reclamation, integrated weed management and implementation of appropriate timing restrictions and mitigation measures.

Cumulative Effects:

Cumulative effects to which the Proposed Action may contribute are those of reduction and fragmentation of habitat. These impacts are cumulative with other past actions within the project area, including oil and gas operations, plugging and abandoned well pads, regional roadways, recreational uses of the area and active grazing within the grazing permit. Any additional wells in the area would result in incremental disturbances to localized wildlife and wildlife habitat impacts within the region.

Protective/Mitigation Measures

- Interim and final reclamation should restore pronghorn antelope habitat and include native shrubs, grasses, and forbs appropriate to the ecological site disturbed.
- Construction and other surface disturbing activities should be prohibited January 1 through March 1 on the Lee #2 and Federal #6-6, to protect the pronghorn antelope during their concentrated winter use of the area.
- Ground disturbing activities around the Lee #2 pad site should be limited to the area below the naturally occurring ridge on the east and north sides.
- Surface runoff from the Lee #2 must remain in the same drainage as the disturbance. It is imperative that no storm water or any other fluids be allowed to flow from Lot 9 into Lot 8 and into the drainage basin that provides water to two wildlife/stock ponds in Sections 8 and 20 to the south and east of the proposed pad.
- The pond adjacent to the Federal #6-6 should be cleaned of silt and restored to function as part of wildlife mitigation.
- Access road would be limited to the use of authorized personnel and would not be open to the public.
- All open top tanks and pits should be covered with bird netting or other system designed to eliminate any hazard to bird and flying mammals.
- Pits shall be fenced and the bottom two feet of the pit fence lined with wire mesh to prevent small animals from entering the pit.
- Wildlife-friendly fence should be installed where fences are needed.

Alternative B

Direct and Indirect Effects:

Alternative B would result in impacts similar in nature to those under the Proposed Action to wildlife. Alternative B would reduce direct impacts from the localized alterations by 0.03 acres of total habitat removed in relation to the Proposed Action.

Finding on Public Land Health Standard 3

Standard 3:

Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential.

Finding:

Project impacts upon Standard 3 would be minimal after successful interim reclamation, integrated weed management and implementation of appropriate timing restrictions and mitigation measures.

Cumulative Effects:

Cumulative effects to wildlife as a result of Alternative B are identical to those identified under the Proposed Action.

Protective/Mitigation Measures

- Interim and final reclamation should restore pronghorn antelope habitat and include native shrubs, grasses, and forbs appropriate to the ecological site disturbed.
- Construction and other surface disturbing activities should be prohibited January 1 through March 1 on the Lee #2 and Federal #6-6, to protect the pronghorn antelope during their concentrated winter use of the area.
- Ground disturbing activities around the Lee #2 pad site should be limited to the area below the naturally occurring ridge on the east and north sides.
- Surface runoff from the Lee #2 must remain in the same drainage as the disturbance. It is imperative that no storm water or any other fluids be allowed to flow from Lot 9 into Lot 8 and into the drainage basin that provides water to two wildlife/stock ponds in Sections 8 and 20 to the south and east of the proposed pad.
- The pond adjacent to the Federal #6-6 should be cleaned of silt and restored to function as part of wildlife mitigation.
- Access road would be limited to the use of authorized personnel and would not be open to the public.
- All open top tanks and pits should be covered with bird netting or other system designed to eliminate any hazard to bird and flying mammals.
- Pits shall be fenced and the bottom two feet of the pit fence lined with wire mesh to prevent small animals from entering the pit.
- Wildlife-friendly fence should be installed where fences are needed.

3.4 HERITAGE RESOURCES AND HUMAN ENVIRONMENT

3.4.1 Cultural Resources

Current Conditions:

A records search of the general project area, and an intensive (Class III) inventory of the Area of Potential Effect (as defined in the National Historic Preservation Act (NHPA)), was completed by Grand River Institute (CRIR1110-10). They surveyed the project locations for historical, culturally important, religious, paleontological, and archaeological resources.

Cultural resource investigations in the region have documented surface diagnostic artifacts and excavated cultural materials consistent with the regional cultural history. Evidence of the paleoindian, the Formative, and the Protohistoric Era's has been found in the area. Historic records indicate occupation or use by EuroAmerican trappers, settlers, miners, and ranchers. During the Grand River Institute cultural inventory of the project area, four (4) isolated finds were located: 2 historical and 2 prehistoric. No historic or cultural sites were identified during the inventory.

No Action

Direct and Indirect Effects:

Under the No Action Alternative, the proposed action would not be implemented and impacts to cultural resources would not occur.

Cumulative Effects:

As no direct or indirect changes to cultural resources would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

Soil impacts would occur to 13.07 acres of previously undisturbed soils with total soil disturbing activities occurring to 20.73 acres. Soil disturbances and excavation could result in impacts to unidentified cultural resources during the construction and reclamation periods. If any heritage materials are encountered during the construction phase of the proposed action, the contractor would immediately stop all construction activities and notify the BLM. Should a site be evaluated as eligible for inclusion in the National Register of Historic Places, it would be treated in the proper manner to mitigate any effects of construction, and according to the guidelines set by the BLM and Colorado State Historic Preservation Office.

Cumulative Effects:

Impacts to cultural resources are cumulative with other past actions within the project area, including the stock pond near the Federal #6-6, oil and gas operations, plugged and abandoned well pads, and the regional roadways. Any additional wells in the area would result in incremental disturbances to localized soil, and therefore potentially to cultural resources, within the region.

Alternative B

Direct and Indirect Effects:

Alternative B would result in impacts similar in nature to those under the Proposed Action. Alternative B would reduce direct impacts from the localized alterations by reducing total soil disturbing activities by 0.03 acres (in relation to the Proposed Action).

Cumulative Effects:

Cumulative effects to soils, and therefore potentially, to cultural resources, as a result of Alternative B, are identical to those identified under the Proposed Action.

3.4.2 Paleontological Resources

Current Conditions:

The BLM uses the Potential Fossil Yield Classification (PFYC) system to identify areas with a high potential to produce significant fossil resources (IM 2008-009). The surface geology for the project area is composed of Upper Cretaceous age Mancos Shale and Quaternary age older gravels and alluviums from the pre-Bull Lake Age, which both have a BLM designation of Class 3 under the PFYC system for paleontological resources on public lands (BLM IM No. 2008-009). The Class 3 designation applies to fossiliferous sedimentary geologic units that have either

moderate or unknown fossil potential. These geologic units have yielded scientifically important vertebrate fossils such as marine reptiles and mammoth teeth.

A records search of the general project area, and an intensive (Class III) inventory of the Area of Potential Effect (as defined in the National Historic Preservation Act (NHPA)), was completed by Grand River Institute. They surveyed the project locations for paleontological, as well as historical, culturally important, religious, and archaeological resources. No paleontological resources were identified in the Grand River Institute survey. The GJFO BLM GIS paleontological database was reviewed for known, surveyed paleontological localities and none were found in or near the project area.

No Action

Direct and Indirect Effects:

Under the No Action Alternative, the proposed project would not occur and it therefore would not impact paleontological resources.

Cumulative Effects:

As no direct or indirect impacts to paleontological resources would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

Surface disturbances and excavations do have the potential to directly or indirectly impact paleontological resources in the area. Although no paleontological resources are known to occur within the proposed project area, impacts to paleontological resources from the proposed project implementation could possibly occur. Direct impacts of the proposed project to fossil localities could result from the ground disturbing activities or from the disturbance of the stratigraphic context in which they are located. This project could also create indirect impacts to areas by changing erosion patterns.

All BLM GJFO paleontological resources stipulations would be followed as indicated in the COAs, attached to the APD. Although the area has a Class 3 designation, and no pre-disturbance survey is required for the project, Grand River Institute surveyed the project area for paleontological resources and found no resources present. If previously undocumented paleontological sites are encountered during construction, all activities shall stop in the vicinity of the discovery and the BLM would be immediately notified. Mitigation measures such as data recovery may be required by the BLM to prevent impacts to newly identified paleontological resources.

Cumulative Effects:

The area of the proposed action has been subject to increases in oil and gas well development, which results in surface disturbances. There could also be an increase in recreational off-road vehicular access of the greater project area. An increase in human activity in the area could increase the possibility of unauthorized removal or other alterations to paleontological resources in the area. An increase in wells in the area would result in incremental disturbances to localized soils, and therefore potentially to paleontological resources, within the region.

Alternative B

Direct and Indirect Effects:

Alternative B would result in impacts similar in nature to those under the Proposed Action. Alternative B would reduce direct impacts from the localized alterations by reducing total soil disturbing activities by 0.03 acres (in relation to the Proposed Action).

Cumulative Effects:

Cumulative effects to soils, and therefore potentially, to paleontological resources, as a result of Alternative B, are identical to those identified under the Proposed Action.

3.4.3 Tribal and Native American Religious Concerns

Current Conditions:

American Indian religious concerns are legislatively considered under several acts and Executive Orders, namely the American Indian Religious Freedom Act of 1978 (PL 95-341), the Native American Graves Environmental Assessment Protection and Repatriation Act of 1990 (PL 101-601), and Executive Order 13007 (1996; Indian Sacred Sites). In summary, these require, in concert with other provisions such as those found in the NHPA and ARPA, that the federal government carefully and proactively take into consideration traditional and religious Native American culture and life and ensure, to the degree possible, that access to sacred sites, the treatment of human remains, the possession of sacred items, the conduct of traditional religious practices, and the preservation of important cultural properties are considered and not unduly infringed upon. In some cases, these concerns are directly related to “historic properties” and “archaeological resources”. In some cases elements of the landscape without archaeological or other human material remains may be involved. Identification of these concerns is normally completed during the land use planning efforts, reference to existing studies, or via direct consultation.

A records search of the general project area, and an intensive (Class III) inventory of the Area of Potential Effect (as defined in the National Historic Preservation Act (NHPA)), was completed by Grand River Institute (CRIR 1110-10). They surveyed the project locations for religious, as well as culturally important, historical, paleontological, and archaeological resources. No evidence was found to suggest the project area holds special significance for Native Americans.

No Action

Direct and Indirect Effects:

Under the no action alternative, the project would not occur and result in no impacts to tribal and Native American religious concerns.

Cumulative Effects:

As no direct or indirect changes to tribal and Native American religious concerns would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

The proposed action is not known to physically threaten the integrity of any TCPs, prevent access to sacred sites, prevent the possession of sacred objects, or interfere or otherwise hinder

the performance of traditional ceremonies and rituals pursuant to AIRFA or EO 13007. There are currently no known threats to remains that fall within the purview of NAGPRA or ARPA. Although none have been identified, any heretofore unidentified effect of the proposed action to Native American Religious Concerns is expected to be negligible in both the short and long term.

Cumulative Effects:

It is expected that the area would continue to see oil and gas development increase. There could also be an increase in recreational off-road vehicular access of the greater project area. An increase in human activity in the area could increase the possibility of alterations to unidentified tribal and Native American religious resources in the area.

Alternative B

Direct and Indirect Effects:

As Alternative B would reduce direct impacts from the localized alterations by reducing total soil disturbing activities by 0.03 acres (in relation to the Proposed Action), it would result in impacts similar in nature to those under the Proposed Action.

Cumulative Effects:

Cumulative effects to soils, and therefore potentially, to unidentified resources, as a result of Alternative B, are identical to those identified under the Proposed Action.

3.4.4 Visual Resources

Current Conditions

The project area is classified as Visual Resource Management (VRM) Class IV and is not within view of heavily travelled improved roadways. Management objectives for VRM Class IV allow for management activities that require major modification of the existing character of the landscape. Observers are likely to be recreational users and grazing permittees. Density of existing development is relatively sparse and limited to range improvements, unimproved roadways, with landscape scars from pipelines and abandoned and reclaimed well locations. The project area contains varied landscape types. Broken ridges, slopes, and deep drainages with greens, greys, and light brown tones from exposed soils and vegetation dominate the eastern half of the project area. Depending on the observation point, ridges become more prominent forms within this area when silhouetted against the skyline, creating for the viewer enclosed and focal landscapes. The variable topography as well the textures created by scattered low to medium density juniper stands tends to dull and absorb the generally well-positioned disturbances. The key observation points within this area include MCR 1.60 RD, MCR 2.00 RD and the unnamed existing access to the Ezra #3.

Visually central to the area is a north-south trending mesa top, along which runs MCR 2.00 RD, which runs along the mesa's length. Views looking east from the roadway are bounded by relatively dense juniper near the north part of the project area. Views to the west do not become prominent until the southern part of the mesa, where the landscape becomes much more panoramic in nature. Open desert with scattered shrublands dominates the viewshed to the west from this and from more western observation points along MCR 1.80 RD/ Bar-X RD. Range fences, roadways, and old two-track access roads sketch linear forms across the area. Dull browns and grey/green tones dominate the massive westerly expanse. The Book Cliffs are

readily visible from this area and mark the northern limit of the project area landscape. Two of the four wells, Lee #2 and Federal #6-6 are proposed within the open western landscape and the Thomas #5 and Ezra #3 would be located within the more varied landscape within the project area.

No Action

Direct and Indirect Effects:

Under the no action alternative, the project would not occur and would therefore not result in any impacts to areas visual resources.

Cumulative Effects:

As no direct or indirect changes to visual resources would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

Visual impacts to observers in the area would vary during different phases of the Proposed Action. Construction equipment, rigs, production facilities, linear scars from unreclaimed pipelines, vegetative and minor topographic alterations would all create various levels of contrast that could draw a viewer's eye. These visual intrusions would occur and terminate over varying timeframes. Activities associated with construction and exploration would produce unavoidable short-term adverse impacts to the visual character of the area. Such activities would interrupt natural landscape forms, textures, colors and vegetation. Successful interim reclamation, required to begin within six months of well completion, would be expected to temper many of these initial visual impacts by restoring natural forms and vegetation. Some topographic alterations (small well pads) and structures (production facilities) would remain for the productive lifespan of the well, until the time of plugging and final reclamation.

Wells Lee #2 and Federal #6-6 would lie within the western panoramic landscape and the Ezra #3 and Thomas #5 would be located in the more visually variable landscapes to the east. Due to the unique characteristics of each landscape type, activities and structures at the Federal #6-6 and Lee #2 would be more likely to introduce more noticeable contrast than those at the Thomas #5 and Ezra #3 locations. However, the Lee #2 is proposed to be situated against the bottom of the western mesa escarpment, minimizing its prominence to regional observers, who are relatively few in this remote area. The textures created by the taller woody vegetation at the Ezra #3 are would soften visual contrasts that would likely result from installation of production facilities, and the pad's topographic location is well suited to shielding it from most observers.

Topography would also likely assist in reducing the visual contrasts that would be introduced by construction and operation of the Thomas #5 location, proposed to be located about 800 feet south of MCR 1.60. Textures of sparsely scattered low shrubs and trees are less capable of absorbing contrast at this location than they are at others with taller woody vegetation. As proposed, the pad would not be visible to viewers to the south, as the topography would screen the pad, and would be partially screened from drivers of MCR 1.6 RD. Should tall vertical production facilities (e.g. tanks) be installed at the Thomas #5 location, they could break the ridgelines to create dominating contrasting forms. All practical efforts should be made to limit

tank and facilities height at this location. It is conceivable that tall facilities could also be visible from observation points along well traveled MCR 4.00 RD (Baxter Pass Road) within the West Salt Creek drainage to the east.

Long term visual impacts would likely occur from the introduction of distinct angular and vertical lines as well as smoother textures, compared to those of the local vegetation and lands. Over the short to moderate term, exposed soils resulting from the construction of the well pads, pipelines, and access roads would result in lighter colors and smoother textures than occur in the existing landscape. Successful reclamation would mute such effects and eventually could blend with the colors and textures of existing vegetation.

Proper facilities height, well-designed reclamation and repetition of landscape forms/colors/textures would greatly lessen such impacts, particularly with respect to the Federal #6-6 and Thomas #5 locations. However, proper placement of well-site equipment, along with repetition of matte colors would also alleviate visual intrusion, particularly with respect to the Ezra #3 and Lee #2 facilities. Introduction of texture such as scattered native rock, soil roughening and native vegetation to the exposed slopes of the Thomas #5 and Lee #2 would reduce contrasting textures with the surrounding landscape slopes.

Cumulative Effects:

Topographic impacts would be cumulative with other past actions within the project area, including the stock pond near the Federal #6-6, old well pads and regional roadways. Additional wells in the area would continue to result in incremental disturbances similar to those described above.

Protective/Mitigation Measures:

- To reduce visual impacts at the Federal #6-6, Lee #2 and Ezra #3, all structures, including but not limited to long-term storage tanks, should be no taller than 12 feet. At no location should. At all locations, facilities should be designed to be as low-profile as possible, with every practical effort made to prevent tanks or facilities from protruding above adjacent ridgelines.
- Facilities should be placed to prevent observation by users of Mesa County roads as much as practical.
- Ground disturbing activities around the Lee #2 pad site should be limited to the area below the naturally occurring ridge on the east and north sides.
- Fill slopes of the Thomas #5 and Lee #2 should implement regional rock and rough finishing, to reestablish landform texture. Rock shall be of the same type and color and not larger than surrounding area surface stones.
- Aboveground facilities at the Federal #6-6 and Thomas #5 should be painted BLM standard color "Carlsbad Canyon" brown.
- Aboveground facilities at the Lee #2 and Ezra #3 should be painted BLM standard color "Shale" green.

Alternative B

Direct and Indirect Effects:

Alternative B would result in negative impacts similar in nature to those under the Proposed Action. However, structures at the Thomas #5 location are unlikely to be seen above the adjacent ridgeline under Alternative B.

Cumulative Effects:

Cumulative effects as a result of Alternative B are identical to those identified under the Proposed Action.

Protective/Mitigation Measures:

- To reduce visual impacts at the Federal #6-6, Lee #2 and Ezra #3, all structures, including but not limited to long-term storage tanks, should be no taller than 12 feet. At no location should. At all locations, facilities should be designed to be as low-profile as possible, with every practical effort made to prevent tanks or facilities from protruding above adjacent ridgelines.
- Facilities should be placed to prevent observation by users of Mesa County roads as much as practical.
- Ground disturbing activities around the Lee #2 pad site should be limited to the area below the naturally occurring ridge on the east and north sides.
- Fill slopes of the Thomas #5 and Lee #2 should implement regional rock and rough finishing, to reestablish landform texture. Rock shall be of the same type and color and not larger than surrounding area surface stones.
- Aboveground facilities at the Federal #6-6 and Thomas #5 should be painted BLM standard color "Carlsbad Canyon" brown.
- Aboveground facilities at the Lee #2 and Ezra #3 should be painted BLM standard color "Shale" green.

3.4.5 Social

Current Conditions

The population of Mesa County was found to be 146,093 in the 2009 Census estimate. Among those county residents, 85% were living in urban areas and 15% were living in rural areas. It is expected that the population of Mesa County could nearly double by the year 2035. Based on the 2009 Census estimate, 38% of Mesa county residents live in Grand Junction, the county seat and largest city in the county, while 51% live in unincorporated areas.

According to the 2009 Census estimate, whites comprise the majority of the population at 95.4%. Minorities comprise approximately 15.7% of the population in Mesa County and 26% of the Colorado population. Persons describing themselves as Hispanic or Latino comprised 12.7% of the Mesa County population. The census reported 10.6% of the Mesa County population as living in families with incomes below the poverty line in 2008. This compares with 11.2% for the entire state. Minority and low income populations are dispersed throughout the county.

Among county residents, 49% are males, 51% are females. The average age of a resident is 38.1 years old. Most residents (76%) work in the private sector. Fourteen percent (14%) of residents

work for the government. Private sector workers are employed most often within the construction, agricultural, forestry, hunting and fishing, and mining trades. Activities within the immediate project vicinity and the surrounding area include recreation, ranching/farming, hunting, and oil and gas development on public lands.

No Action

Direct and Indirect Effects:

Under the no action alternative, the proposed project would not occur and not influence the social conditions of the area.

Cumulative Effects:

As no direct or indirect changes to social conditions would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

The completion of the project would bring additional jobs and revenue to Mesa County and associated local communities.

Cumulative Effects:

The project would contribute to the effects of the growing local oil and gas industry, in the form of new jobs and revenues that could influence the area's social climate and demographic makeup. Any additional well development in the area would result in incremental impacts to the social climate of the region.

Alternative B

Direct and Indirect Effects:

The type and level of impacts to the social climate experienced from Alternative B would be the same as those resulting from the Proposed Action. Activities associated with drilling, completion and well operation phases would be the same under both action alternatives for all wells.

Cumulative Effects:

Cumulative effects as a result of Alternative B would be identical to those identified under the Proposed Action.

3.4.6 Economic

Current Conditions

The economy of Mesa County includes the following key industries; construction, ranching/farming, recreation (including hunting), and the development of oil and gas resources. Prior to the year 2000, the regional economy was driven primarily by tourism, agriculture, hunting and recreation, and construction. Since 2000, energy development has become the widely recognized economic driver in Mesa County (BBC 2008). Annual oil and gas production in Mesa County has risen significantly since 2000. Oil production has risen from 3,444 barrels in 2000 to 110,272 barrels in 2009 (COGCC 2011). Gas production has risen from 5,627,632 MCF in 2000 to 35,822,981 MCF in 2009 (COGCC 2011). Long term projections are for natural gas drilling to gradually level and shift to Garfield and Rio Blanco counties (BBC 2008).

The economy of Mesa County benefits substantially from federal payments generated from oil and gas development within the county. The federal government's Payment in Lieu of Taxes (PILT) pays county governments funds to offset the costs of lost property taxes that result from having federal government within county boundaries. In 2009, PILT resulted in a payment of \$2,273,111 to Mesa County for 1,554,493 acres of federal public lands held within Mesa County borders. Oil and gas lessees on public lands also pay royalties of 12.5% of the wellhead value of oil and gas. Half of these royalties are paid to Colorado, which in turn distributes funds (typically over \$1 million annually) to Mesa County.

Severance tax revenue from oil and gas development is also a large source of Mesa County public revenue. Severance tax is an excise tax imposed upon nonrenewable natural resources removed from the earth and sold for private profit. Severance taxes on oil and gas are based on the gross income derived from the sale of these commodities. For periods prior to Fiscal Year 2008, state statute [Section 39-29-110(1)(c), C.R.S.] directed Colorado's Department of Local Affairs' (DOLA) Executive Director to distribute 15 percent of the severance tax receipts directly to counties and municipalities where energy and mineral production employees reside. Starting with Fiscal Year 2008, House Bill 07-1139 changed the percentage of revenues to be distributed to 30 percent. In 2006 severance taxes received were \$2,954,829. (Colorado Office of the State Auditor 2007)

Property tax revenues from oil and gas development also greatly benefit Mesa County public revenues. In 2007, the assessed value of oil and gas properties was \$97 million, approximately 5% of the county's total assessed value. (Colorado Office of the State Auditor 2007)

Hunting, fishing, and recreation also contribute to the economy of Mesa County. Recreation supports the county economies through purchasing lodging, food, sporting goods, fuel, outfitting services, and other associated supplies. Hunting and fishing in Mesa County lead to an estimated economic impact of \$58 million dollars every year (Pikton 2004).

No Action

Direct and Indirect Effects:

Under the no action alternative, the proposed project would not occur and not influence the economic conditions of the area. No change in jobs, royalties, or revenues would result from allowing the proposed project.

Cumulative Effects:

As no direct or indirect changes to economic conditions would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

The development and use of proposed wells would allow SEV to develop their leases and provide additional natural gas for the national energy market. This would generate federal and state tax revenue as well as revenue for SEV and additional jobs, royalties, and revenues to local economies.

Cumulative Effects:

The project would contribute to the effects of the local economy in the form of increased natural gas production, new jobs and increased revenues. Any additional well development and production in the area would result in incremental impacts to local economy.

Alternative B

Direct and Indirect Effects:

The type of level of impacts to the economy experienced from Alternative B would be the same as those experienced under Alternative A. Activities associated with drilling and completion and well operation phases would be the same under both action alternatives for all wells.

Cumulative Effects:

Cumulative effects as a result of Alternative B would be identical to those identified under the Proposed Action.

3.4.7 Environmental Justice

Current Conditions:

Executive Order 12898, (February 11, 1994), requires federal agencies to assess projects to ensure they would not result in disproportionately high or adverse environmental, health, or safety effects on minority and low-income populations. In Mesa County, minority populations are primarily Hispanics (U.S. Census Bureau 2009). The census also reported 10.6% of the Mesa County population as living in families with incomes below the poverty line in 2008. Minority and low income populations are dispersed throughout the county.

No Action

Direct and Indirect Effects:

Under the no action alternative, the proposed project would not occur and not influence the minority or low income populations of the area.

Cumulative Effects:

As no direct or indirect changes to minority or low income populations would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

No disproportionate affects to minority or low income populations would result from the Proposed Action. Indirect effects could include effects due to overall employment opportunities related to the oil and gas and service support industry in the region as well as the economic benefits to state and county governments related to royalty payments and severance taxes.

Cumulative Effects:

The proposed action would contribute to effects due to overall employment opportunities related to the oil and gas and service support industry in the region as well as the economic benefits to state and county governments related to royalty payments and severance taxes.

Alternative B

Direct and Indirect Effects:

The type of level of impacts to minorities or low income populations experienced from Alternative B would be the same as those experienced under the Proposed Action.

Cumulative Effects:

Cumulative effects as a result of Alternative B would be identical to those identified under the Proposed Action.

3.4.8 Transportation/Access

Current Conditions:

US Highway 6 and Interstate 70 carry a significant amount of high-speed traffic, consisting of both light and heavy vehicles. Other roads in the area include MCR 4.00 RD, MCR 2.00 RD, MCR 1.80 RD, MCR 1.60 RD, Bar-X RD and unnamed unimproved roads in the area. Traffic on these roads is relatively light, with use by oil and gas personnel, ranchers and recreationists.

No Action

Direct and Indirect Effects:

Under the no action alternative the project would be denied and no impacts to existing access and transportation would occur.

Cumulative Effects:

As no direct or indirect changes to transportation and access would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

Under the proposed action, increased use of the area by construction vehicles and personnel could result in a safety issue for the public. Proposed new access routes and pipelines routes are minimal and isolated. Appropriate access controls on new access roads (i.e. open to administrative use only) would assist in restricting the general public from these areas. Long term traffic impacts from routine maintenance personnel at the well sites would be ongoing throughout the production life of the well, generally limited to a weekly pickup truck visit.

The proposed action would result in short-term increases in the volume of both heavy and light traffic during the construction, drilling and completion phases of the project. The action area is rural, but travellers of the area could be impacted in the short term by the construction of access and pads, drill-rig moves, and pipeline construction. These impacts would be reduced after well completion. Large tank trucks hauling produced water from tanks on well locations would result in long term impacts. This traffic would be witnessed regionally as well as on I-70 into Utah, to access the nearest Underground Injection Control (UIC) well. Total water truck trips could be

about sixteen (16) trips per month, resulting in road degradation, fugitive dust and equipment-related noise.

Cumulative Effects:

The cumulative impacts of oil and gas development fluctuate as abandoned wells are reclaimed and the construction of new access roads and well pads results in new surface disturbance. The impacts of increased roadway use, including dust generation and air, water and noise pollution would be incremental to the surrounding impacts to transportation networks in the area.

Protective/Mitigation Measures

- New access roads should be limited to the use of authorized personnel and would not be open to the public.

Alternative B

Direct and Indirect Effects:

The type and level of impacts to transportation networks experienced from Alternative B would be the same as those experienced under the Proposed Action. Activities associated with drilling and completion and well operation phases would be the same under both action alternatives for all wells.

Cumulative Effects:

Cumulative effects as a result of Alternative B would match those of the Proposed Action.

3.4.9 Wastes, Hazardous or Solid

Current Conditions:

Hazardous and solid wastes not be a part of the natural environment could be introduced through implementation of the proposed action. 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 and 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 projects of this nature in this region. 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 which would accompany any authorization resulting from this analysis. The document referenced above is hereby incorporated into and made a part of this Environmental Assessment Record. This document is available on the internet at: <http://www.co.blm.gov/nepa/rmpdocs/gsfdocs/gsfopa.htm>

The most pertinent of the Federal laws dealing with hazardous materials contamination are:

The Oil Pollution Act (Public Law 101-380, August 18, 1990) - This law 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)B This law 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.) - This law 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 exempt from this legislation. 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 (referenced above). BLM would have access to regional resources if justified by the nature of an incident.

No Action

Direct and Indirect Effects:

Under the No Action Alternative, the proposed action would not be implemented and impacts to waste and waste management would not occur.

Cumulative Effects:

As no direct or indirect changes to waste and waste management would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

Typical wastes associated with the proposed action include trash, sewage, produced water, diesel fuel, hydraulic fluid, lubricants, drilling fluids and other hydrocarbons. These materials would be used for refueling and maintaining drilling equipment and vehicles and for drilling and completion operations themselves. Pollutants that could be released during well operation would include condensate, produced water and perhaps glycol (an antifreeze product). While uncommon, a transportation accident could occur, which could result in a release of any of these materials. A release could result in contamination of surface water or soil. Improper well casing or 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.

Cumulative Effects:

Incremental effects would be low if design features and other preventative measures failed. Releases of hazardous materials would require clean up and removal of materials to minimum standards established by agencies such as the EPA, CDPHE and COGCC. Remnant effects are cumulative to other past actions in the region from oil and gas development, rangeland activities, recreation, and other uses.

Protective/Mitigation Measures

- The well pad locations and surrounding area(s) would be cleared of all debris, trash and materials not required for production.
- Hydrocarbons on locations should be removed in accordance with Onshore Orders.
- All installed production facilities (e.g. storage tanks, load-outs, separators, treating units) with the potential to leak or spill oil, condensate, produced water, glycol, or other fluid which might be a hazard to public health or safety should be placed within an appropriate secondary containment structure.
- All chemical containers should be clearly labeled, maintained in good condition and placed within secondary containment.
- Garbage, trash and other waste materials would be collected in a portable, self-contained and fully-enclosed trash cage during drilling and completion operations. Upon completion of operations (or as needed) the accumulated trash would be disposed of at an authorized sanitary landfill. No trash would be burned on location or placed in pits or bore holes.
 - Self-contained, chemical toilets would be provided for human waste disposal. Upon completion of operations, or as needed, the toilet holding tanks would be pumped and the contents thereof disposed of in the nearest facility approved for sewage disposal.

Alternative B

Direct and Indirect Effects:

The type and level of impacts from hazardous and solid wastes under Alternative B would be the same as those under the Proposed Action. Activities associated with drilling, completion and well operation phases would be the same under both action alternatives for all wells.

Cumulative Effects:

Cumulative effects as a result of Alternative B are identical to those identified under the

Proposed Action.

Protective/Mitigation Measures

- The well pad locations and surrounding area(s) would be cleared of all debris, materials, trash and junk not required for production.
- Hydrocarbons on locations should be removed in accordance with Onshore Order #7.
- All installed production facilities (e.g. storage tanks, load outs, separators, treating units) with the potential to leak or spill oil, condensate, produced water, glycol, or other fluid which may be a hazard to public health or safety would be placed within an appropriate secondary containment structure.

- All chemical containers would be clearly labeled, maintained in good condition and placed within secondary containment.
- Garbage, trash and other waste materials would be collected in a portable, self-contained and fully-enclosed trash cage during drilling and completion operations. Upon completion of operations (or as needed) the accumulated trash would be disposed of at an authorized sanitary landfill. No trash would be burned on location or placed in pits or bore holes.
 - Self-contained, chemical toilets would be provided for human waste disposal. Upon completion of operations, or as needed, the toilet holding tanks would be pumped and the contents thereof disposed of in the nearest facility approved for sewage disposal.

3.5 LAND RESOURCES

3.5.1 Recreation

Current Conditions:

The proposed project areas are on BLM-administered public lands in Mesa County, Colorado. Over 70% of Mesa County is federally controlled land and the majority of that land is managed by the BLM-GJFO. No developed recreational facilities, such as campgrounds or picnic areas are in or near the project area. It is not within a special recreation management area, wilderness study area, or special designation area. Recreation opportunities in the project area include off-highway vehicle (OHV) use, mountain biking, horseback riding, camping, hiking, shooting, hunting, and natural feature and wildlife viewing. OHVs are limited to existing motorized routes under the current travel management plan.

No Action

Direct and Indirect Effects:

Under the no action alternative, the project would be denied and no impacts to recreation would occur.

Cumulative Effects:

As no direct or indirect changes to recreation would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

Construction of the proposed action would alter the recreational setting and experience in the project area from noise generated by construction equipment, fugitive dust, modification to the landscape in excess of expectations, and recreationists would have an increased chance of encountering construction personnel and equipment. Intensive activities associated with the project would be likely to disperse big game, and thus big game hunters. However, these impacts would be short term and limited to the duration of construction, drilling and completion operations.

In the long-term, the wells, access roads and pipelines would amount to a small incremental change in the character of the local recreational resources of the area. The setting and recreational experience of users in the area would be insignificantly affected by the addition of the four wells, new access and pipeline tie-ins proposed.

Cumulative Effects:

Impacts to recreation would be cumulative with other past actions within the project area, including current and abandoned oil and gas operations, regional roadways, and active livestock grazing. These increases in human activity and surface disturbance could impact the recreational value of previously unaffected areas. Any additional well development in the area would continue to result in incremental impacts to recreation opportunities and experiences in the region.

Alternative B

Direct and Indirect Effects:

The type and level of impacts to recreation experienced from Alternative B would be the same as those under the Proposed Action.

Cumulative Effects:

Cumulative effects as a result of Alternative B would be identical to those identified under the Proposed Action.

3.5.2 Range Management

Current Conditions:

The proposed Ezra #3 and Thomas #5 well projects would be located in both the State Line Pasture of the San Arroyo grazing allotment and the proposed Federal #6-6 and Lee #2 well projects would be located in the Bar X allotment. Under the current grazing permits, season of livestock use in the State Line Pasture of the San Arroyo allotment is approximately 500 cattle from 03/01 to 05/10 and in the Bar X allotment, season of livestock use is approximately 342 cattle from 11/01 to 03/31.

No Action

Direct and Indirect Effects:

The No Action Alternative would not affect rangeland resources and rangeland resource management would continue in the area as managed in the San Arroyo and Bar X allotments.

Cumulative Effects:

Because no direct or indirect changes to rangeland resources would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

The proposed action would affect range lands in the area as it would result in a slight loss of available forage. Long term disturbance would be 4.52 acres, Short term disturbance, which would be recontoured and seeded within six months of well completion, would total 20.73 acres. As the allotments encompass approximately 39,000 acres in Colorado, the impact would be negligible. The Federal #6-6 well would be fenced after interim reclamation to eliminate grazing of the newly reclaimed well pad edges and increase the success of re-vegetation. If other reclaimed pads were to be threatened or damaged by cattle, they could be fenced out, too.

The main impacts to range management would be cattle being harassed and displaced by traffic during the construction, drilling and completion of the wells. Federal #6-6 well borders the Bar X – San Arroyo allotments boundary fence. The fence would be temporarily moved back to the south, and then replaced in its original location after well completion operations and after successful reclamation can withstand grazing pressure. At the time the fence was moved it would need to be done quickly and carefully, to prevent cattle from crossing from one allotment to the other. If there are gates on the roads to the wells, they would need to be kept closed or cattle guards installed. SEV plans to approach the Thomas #5 pad from the west during construction and drilling, to minimize impacts to the cattle guard on MCR 1.60 RD east of the proposed Thomas #5 access.

A silted-in stock pond lies adjacent to the proposed Federal #6-6 well. During construction, the pond should be cleaned out so that it can return to functional condition, catching stormwater to be held available to wildlife and livestock. A pre-construction meeting should be held onsite to discuss pond clean-out procedures. This would somewhat mitigate impacts to cattle and wildlife.

Weed management by operators is required within a BLM lease, and weeds already occur in the project area. As such, weed management in the project area and the grazing allotment would likely benefit from the project. The proposed project would involve the removal of vegetation during construction and well drilling. Weeds common in the area often benefit from and become more active in areas of disturbance. Increased vehicular traffic and use of equipment could carry weed seeds into and out of the project area. Either circumstance could increase the likelihood of noxious and invasive weed invasion in the project area.

Cumulative Effects:

The Proposed Action would result in increased human ingress and egress from the project area. This would increase the chances of livestock being hit or affected by traffic and increase the spread of undesirable species into native forage. Weed management in areas where undesirable species occur would be beneficial and help to alleviate cumulative effects that negatively impact vegetative communities supporting local wildlife and agricultural species.

Protective/Mitigation Measures

- Reclamation would need to be fenced to exclude cattle.
- Guards (or fencing) should be installed around the well to protect wildlife and livestock.
- Signs dictating opening/closure of gates should be installed on project roads, or cattle guards could be installed.
- The stock pond next to the proposed Federal #6-6 should be cleaned out and made functional.
- A pre-construction meeting including a BLM range conservationist should be held onsite to discuss fence move and pond clean-out.

Alternative B

Direct and Indirect Effects:

Alternative B would result in impacts similar in nature to those under the Proposed Action to vegetation. Alternative B would reduce direct impacts from the localized alterations by 0.03 acres of total forage removed in relation to the Proposed Action.

Cumulative Effects:

Cumulative effects to vegetation as a result of Alternative B are identical to those identified under the Proposed Action.

Protective/Mitigation Measures

- Reclamation would need to be fenced to exclude cattle.
- Guards (or fencing) should be installed around the well to protect wildlife and livestock.
- Signs dictating opening/closure of gates should be installed on project roads, or cattle guards could be installed.
- The stock pond next to the proposed Federal #6-6 should be cleaned out and made functional.
- A pre-construction meeting including a BLM range conservationist should be held onsite to discuss fence move and pond clean-out.

3.5.3 Land Tenure, Rights of Way and other Uses

Current Condition

Land tenure systems are designed to determine who can use what resources for how long, and under what conditions. The Grand Junction RMP states that existing withdrawals from mineral locations on 124,443 acres would continue within the GJFO, and it recognizes that the development of minerals is important to local economies and national interests (BLM 1987). An objective of the RMP for minerals management is to “make public lands available to exploration and development under the general mining laws” unless the lands are otherwise withdrawn to protect other resources (BLM 1987). No lands in the proposed project area are classified as those withdrawn from minerals management or in areas closed to mineral materials sales.

A review of the Master Title Plats and the LR2000 database indicates the realty authorizations, shown in Table 9, that occur in the project vicinity. Two oil and gas Rights of Way are overlapped by the Proposed Action. The Proposed Action would access facilities from four non-energy related road Rights of Way and would occur across a watershed holding by the BLM CO State Office.

No Action

Direct and Indirect Effects:

Under the no action alternative, the proposed action would not be implemented and therefore it would not have any affect to Land Tenure, Rights of Way and other uses.

Cumulative Effects:

As no direct or indirect changes to Land Tenure, Rights of Way and other uses would occur under the No Action alternative, no cumulative changes would occur.

Proposed Action

Direct and Indirect Effects:

No direct or indirect changes to Land Tenure, Rights of Way and other uses would occur under the Proposed Action.

Cumulative Effects:

As no direct or indirect changes to Land Tenure, Rights of Way and other uses would occur under the Proposed Action, no cumulative changes would occur.

Alternative B

Direct and Indirect Effects:

No direct or indirect changes to Land Tenure, Rights-of-Way and other uses would occur under the Proposed Action.

Cumulative Effects:

As no direct or indirect changes to Land Tenure, Rights of Way and other uses would occur under Alternative B, no cumulative changes would occur.

Table 9: LR 2000 Database; T 09S, R 104W 6th PM

Serial Number	Section	Owner	Potential Conflict
O&G ROW/Pipelines			
<i>COC-001892</i>	21	ETC CANYON PIPELINE LLC	NO
<i>COC-01136904</i>	1,12,14,15,22,32	NORTHWEST PIPELINE GP	NO
<i>COC-011369</i>	1,11,12,14,15,21,22,28,29,32	NORTHWEST PIPELINE	NO
<i>COC-074989</i>	3,10,15,21,22,28,29,32	ENTERPRISE GAS PROCESSING LLC	NO
<i>COC-013468</i>	5,6,8,9,16,36	ETC CANYON PIPELINE LLC	YES, Tie into
<i>COC-020479</i>	21	ETC CANYON PIPELINE LLC	NO
<i>COC-060531</i>	2,3	ETC CANYON PIPELINE LLC	NO
<i>COC-065032</i>	1,2	BADGER MIDSTREAM SERVICES LLC	NO
<i>COC-062466</i>	3,10,15,21,22,28,29,32	MID-AMERICA PIPELINE CO	NO
<i>COC-054129</i>	4,5,9,16,21	ETC CANYON PIPELINE LLC	Yes, Tie into
<i>COC-061215</i>	21	ETC CANYON PIPELINE LLC	NO
<i>COC-064067</i>	21	LONE MOUNTAIN PRODUCTION CO	NO
<i>COC-067100</i>	2,3	LONE MOUNTAIN PRODUCTION CO	NO
<i>COC-029366</i>	3,10,15,21,22,28,29,32	MID-AMERICA PIPELINE CO	NO
<i>COC-033717</i>	1	ETC CANYON PIPELINE LLC	NO
<i>COC-023632</i>	3	ETC CANYON PIPELINE LLC	NO
O&G Lease/Exploration			
<i>COC-009541</i>	1, 2	AUGUSTUS ENERGY PARTNERS LLC	NO
<i>COC-012377</i>	1, 2	AUGUSTUS ENERGY PARTNERS LLC	NO
<i>COC-015930</i>	2	TENNECO OIL CO	NO
<i>COC-047588</i>	1,2	AUGUSTUS ENERGY PARTNERS LLC	NO
<i>COC-074031</i>	12,13,14	THOMAS OIL & GAS LLC	NO
<i>COC-047588X</i>	1,2	AUGUSTUS ENERGY PARTNERS LLC	NO
<i>COC-065156</i>	6,7,8	THOMAS OIL & GAS LLC / US CAPITAL ENERGY	NO
<i>COC-065154</i>	1,2,3	ROBERT L BAYLESS PRODUCER LLC	NO
<i>COC-065157</i>	9,10,15,16	ROBERT L BAYLESS PRODUCER LLC	NO
<i>COC-065155</i>	4,5	THOMAS OIL & GAS LLC / US CAPITAL ENERGY	NO
<i>COC-073182</i>	1,2	AUGUSTUS ENERGY PARTNERS LLC (Geophysical)	NO

Other Energy Facilities			
COC-071614	24,26,27,28,34	GRAND VALLEY RURAL POWER (ROW-Power)	NO
COC-036731	2,3	GRAND MESA OPER CO (ROW-Roads)	NO
COC-033468	1,2,3	NATL FUEL CORP (ROW-Roads)	NO
COC-035163	11	EASTERBERG (ROW-Roads)	NO
COC-016097	21	GRAND VALLEY RURAL POWER (ROW Power)	NO
Non-Energy Facilities			
COC-012949	36	CO DEPT OF TRANS (CDOT)	NO
COC-012310	6	BLM CO STATE OFFICE (Water Rights)	Yes, Watershed
COC-028274	29,22,28	CO DEPT OF TRANS (CDOT Pit Site)	NO
COC-122239	2,3,11,12,13,14, ,24	CO STATELINE (RR Facility)	NO
COC-064371	25,26,27,28,32, 33,34,35,36	BLM GRAND JCT FO (BLACK RIDGE CANYONS DESIGNATED WSA)	NO
COC-036775	23,24,26,27,28	QWEST CORP	NO
COC-073621	2,3,11,14	MESA COUNTY PUBLIC WORKS	Yes, Access from
COC-073786	3	MESA COUNTY PUBLIC WORKS	Yes, Access from
COC-073621	3	MESA COUNTY PUBLIC WORKS	Yes, Access from
COC-034354	7,18,19,20,29, 32	MESA COUNTY ROAD DEPT	Yes, Access from

CHAPTER 4 - CONSULTATION AND COORDINATION

4.1 LIST OF PREPARERS AND PARTICIPANTS

BLM INTERDISCIPLINARY RESOURCE REVIEW TEAM

NAME	TITLE	AREA OF RESPONSIBILITY
Christina Stark	Natural Resource Specialist	Riparian
Julia Christiansen	Natural Resource Specialist	Surface Management, O&G Permitting, VRM
Aline LaForge	Archaeologist	Cultural Resources, Native American Religious Concerns
Chris Pipkin	Outdoor Recreation Planner	Access, Transportation, Recreation, VRM, Wilderness, ACECs, Wild and Scenic Rivers
Scott Gerwe	Geologist	Minerals, Geology, Paleontology
Alan Kraus	Hazard Materials Specialist	Hazardous Materials
Robin Lacy	Realty Specialist	Land Status/ Realty Authorizations
Heidi Plank	Wildlife Biologist	Migratory Bird Treaty Act, T&E Species, Terrestrial & Aquatic Wildlife
Anna Lincoln	Ecologist	Range, Land Health Assessment, T&E Plant Species
Scott Clarke	Range Management Specialist	Vegetation, Range Management
Collin Ewing	NEPA Coordinator	Environmental Justice, Prime & Unique Farmlands, Environmental Coordinator
Nate Dieterich	Hydrologist	Air Quality Water Quality, Hydrology, Water Rights
Mark Taber	Weed Manager	Invasive, Non-Native Species (Weeds)
Russell Long Lathan Johnson	Fire Management Officer Fire Ecologist	Fire Management, Fire Ecology, Fuels Management
David Williams	Range Management Specialist, Moab Field Office	Vegetation, Range Management

4.2 TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED

Colorado Parks and Wildlife (CPW)

Michael Warren
Land Use Specialist
Grand Junction, CO
Paul Creeden
District Wildlife Manager
Fruita, CO

Colorado Oil and Gas Conservation Commission

Dave Kubeczko
Northwest Area Office
Rifle, CO

United States Fish and Wildlife Service

Patty Schrader Gelatt
Fish and Wildlife Biologist
Grand Junction, CO

Wright Water Engineers, Inc.

Peter R. Foster, P.E.
Vice President
Durango, CO

No comments were received from **Mesa County** or **grazing permittees**.

Dave Williams, range conservationist at the **BLM Moab Field Office**, participated as a member of the Interdisciplinary Resource team and is listed in the table above.

CPW commented in an email dated 06 June 2011, identifying four issues pertaining to burrowing owls, pronghorn antelope, closure of routes to public use and the existing Bar-X water catchment. These issues are included and addressed in this analysis.

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APPENDIX 1

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
GRAND JUNCTION FIELD OFFICE

SEV - Four Desert Wells with Roads and Pipelines DOI-BLM-CO-130-2010-0000-EA

INTERDISCIPLINARY TEAM ANALYSIS REVIEW RECORD AND CHECKLIST

Project Title: SEV Four Desert Wells, w/ Roads and Pipelines

Project Leader: Julia Christiansen

Date Proposal Received: March, 2011

Date Proposal Complete: September, 2011 (revised APDs)

Date Submitted for IDT review/input: 7/25/2011

Due Date for IDT review/input: 8/16/2011

Consultation/Permit Requirements

Consultation	Date Initiated	Date Completed	Responsible Specialist/ Contractor	Comments
Cultural/Archeological Survey/SHPO	4/8/11	5/16/11	AIL / GRI	AIL 7/26/2011
Native American				n/a AIL 7/26/2011
Permits Needed (i.e. Air or Water)	8/16/11		proponent	CWA compliance

(NP) = Not Present

(NI) = Resource/Use Present but Not Impacted

(PI) = Potentially Impacted and Brought Forward for Analysis.

N P NI PI	Discipline/Name	Date Review Comp.	Initials	Review Comments (required for elements not carried forward for analysis)
I. PHYSICAL RESOURCES				
PI	Air Quality and Climate	8/16/11	ND	See analysis above
PI	Geologic Resources	7/26/11	DSG	See analysis above
PI	Mineral Resources	7/26/11	DSG	See analysis above
PI	Soils	8/16/11	ND	See analysis above
PI	Water (hydrology\water rights\floodplains)	8/16/11	ND	See analysis above
II. BIOLOGICAL RESOURCES				
PI	Invasive, Non-native Species	8/9/11	MT	Cheatgrass fire hazard concerns at the 6-6, see Weed section
PI	Sensitive Species (Plant\Animal\Migratory Birds)	8/9/11	ARL	See analysis above
PI	Threatened or Endangered	8/9/11	ARL	See analysis above

	Species			
PI	Vegetation	8/24/11	SC	See analysis above
NP	Wetlands & Riparian Zones	8/10/11	CARS	No riparian or wetland zones in the project area.
PI	Wildlife (includes fish, aquatic and terrestrial)		JESC for HLP	Prairie dogs, burrowing owls(?), kit fox, antelope... see analysis
PI	Fire Ecology and Fuels Management		RBL	Cheatgrass fire hazard concerns at the 6-6, see Weed section
III. HERITAGE RESOURCES and HUMAN ENVIRONMENT				
NP	Cultural Resources	7/26/11	AIL	See analysis above
PI	Paleontological Resources	7/26/11	DSG	See analysis above
NP	Tribal and Native American Religious Concerns	7/26/11	AIL	See analysis above
PI	Visual Resources	7/17/11	CPP	See analysis above
	Social			See analysis above
	Economic			See analysis above
NP	Environmental Justice			According to the most recent Census Bureau statistics (2000), no minority or low income communities reside within GJFO Planning Area.
NI	Noise	12/11/11	JESC	Remote area with residences in area. Some short term impacts could affect wildlife during intensive activities like drilling. Impacts during the long term production phase would be minimal.
PI	Transportation/Access	7/17/11	CPP	See analysis above
NP	Wastes, Hazardous or Solid			No quantities of hazardous or solid wastes are located on BLM-administered lands in the proposed project area, and no such wastes would be expected from the Proposed Action or Alternatives.
IV. LAND RESOURCES				
NP	Farmlands, Prime and Unique			No farmlands, prime or unique, in the proximity of the proposed project.
	Range Management	8/24/11	SC	See analysis above
PI	Recreation	7/17/11	CPP	See analysis above
NP	Special Designations (ACECs and SMAs etc)	7/17/11	CPP	No Areas of Critical Environmental Concern in proximity to proposed project.
	Lands/ Realty Authorizations			See analysis above
NP	Wild and Scenic Rivers	7/17/11	CPP	No Wild and Scenic Rivers in/near the project area.
NP	Wilderness and Wilderness Characteristics	7/17/11	CPP	No Wilderness or Wilderness Study Areas in/near the proposed project.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
GRAND JUNCTION FIELD OFFICE

FINDING OF NO SIGNIFICANT IMPACT
Southwestern Energy Ventures – Four Desert Wells
DOI-BLM-CO-130 2011-0038-EA

Based on the analysis of potential environmental impacts contained in the attached environmental assessment, and considering the significance criteria in 40 CFR 1508.27, I have determined that the Proposed Action will not have a significant effect on the human environment, and therefore, no environmental impact statement is required.

BACKGROUND

Southwestern Energy Ventures (SEV) has submitted to the BLM four Applications for Permit to Drill (APDs), to discover and produce natural gas from four locations on their valid federal oil and gas mineral leases issued to them by the BLM. The existing leases are binding legal contracts that allow development of the mineral by the lease holder. Approving the APDs would authorize SEV to construct and drill the proposed wells, access roads, production facilities and pipelines.

The Bureau of Land Management prepared an Environmental Assessment which analyzed the effects of SEV's proposed wells in a desert area about 5 to 10 miles northwest of Mack, Colorado, in Mesa County. Access to the area is by existing roads: Interstate 70 at Exit 11; Colorado Highways 6 and 50 westbound, Mesa County Roads 1.80 and 1.60 and unnamed BLM roads. Proposed locations lie within Sections 4 and 6 of Township 09 South, Range 104 West, 6th PM, in Mesa County Colorado. Initial disturbance for four well pads, 3011 feet/0.6 miles of new road, and 12,537 feet/2.4 miles of new pipeline is estimated to total 13.10 acres. Following successful pipeline and interim reclamation of well pads, long term disturbance lasting through the productive life of the wells would be about 4.32 acres.

Intensity

I have considered the potential intensity/severity of the impacts anticipated from SEV's Four Desert Wells Project decision relative to each of the ten areas suggested for consideration by the CEQ. With regard to each:

- 1. Impacts that may be both beneficial and adverse.** This project may have minor short term impacts to soils, vegetation, and wildlife; however these impacts are not significant. This project could have a long term net benefit for the local economy, vegetation, wildlife and weed management.
- 2. The degree to which the proposed action affects public health and safety.** Approval of the proposed action is not expected to impact public health and safety.

3. *Unique characteristics of the geographic area such as proximity of historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.*

No significant impacts will occur to cultural and historic resources, riparian vegetation, parklands, prime farmlands, visual resources, wetlands, or wild and scenic rivers. The project has been modified to avoid or moderate impacts to topography, fragile soils, ephemeral drainages, livestock and wildlife. No municipal water supply is located in or near the project area.

4. *The degree to which the effects on the quality of the human environment are likely to be highly controversial.*

The impacts of oil and gas exploration and development are generally well known and documented. Therefore the environmental effects are not likely to be controversial.

5. *The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.*

Oil and gas development has a long history in the region and poses no unique or unknown risks.

6. *The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.*

This decision is similar to many previously made and similar decisions will continue to be made by BLM responsible officials regarding oil and gas exploration and development on public lands. The decision is within the scope of the Grand Junction Field Office Resource Management Plan and is not expected to establish a precedent for future actions. The decision does not represent a decision in principle about a future consideration.

7. *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.*

No significant cumulative effects will accrue to the environment, either when combined with the effects created by past and concurrent projects, or when combined with the effects from natural changes taking place, or from reasonably foreseeable future projects.

8. *The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historic resources.* No adverse impacts to the above resources are likely to occur. Although soil disturbances could result in impacts to unidentified cultural resources during the construction and reclamation periods, if any heritage materials are encountered during the construction phase of the proposed action, the contractor would immediately stop all construction activities and notify the BLM.

9. *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.* No impacts to listed species will occur as a result of this action; with the exception of minor water depletions, which have been determined by USFWS to not jeopardize the continued existence of the listed fishes or their critical habitat.

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment. This decision complies with other Federal, State, or local laws and requirements imposed for the protection of the environment.

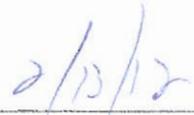
FINDING OF NO SIGNIFICANT IMPACT

On the basis of the information contained in the EA, and all other information available to me, it is my determination that: 1) the implementation of the Proposed Action will not have significant environmental impacts beyond those already addressed in the "Record of Decision and Resource Management Plan," (January, 1987); (2) the Proposed Action is in conformance with the Resource Management Plan; and (3) the Proposed Action does not constitute a major federal action having a significant effect on the human environment. Therefore, an environmental impact statement or a supplement to the existing environmental impact statement is not necessary and will not be prepared.

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



SA Field Manager
Grand Junction Field Office



Date

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
GRAND JUNCTION FIELD OFFICE

DECISION RECORD

**Southwestern Energy Ventures – Four Desert Wells
DOI-BLM-CO-130 2011-0038-EA**

DECISION: It is my decision to authorize the **Proposed Action** described in the attached EA.

The proposed location will meet the operator's need to drill into a precise downhole target area delineated by specific subsurface geological features. Relocation of the pad under Alternative B would be likely to impede SEV's ability to access the targeted downhole formation. Subsequent to the environmental analysis, SEV informed BLM that they would be drilling with a closed loop rig, which does not require a liquids pit, so no concern remains regarding the potential issues of a liquids pit proposed in unstable soils.

Alternative B, to move the Thomas #5 pad, was given strong consideration. Lessening of disturbance by 0.03 acres was ultimately decided to be relatively minor compared to the urgency of a narrow and exact downhole target. An expectation of successful surface reclamation is realistic, given the good native seedbank, shallow slopes with aspects to the east and north, as well as proposed and required state-of-the art reclamation plans and BMPs.

This decision is contingent on implementation and compliance with all attached mitigation measures and monitoring requirements.

Public scoping was conducted by posting this project at the Grand Junction Field Office and on the Grand Junction Field Office NEPA website. Parties with known interests or BLM permits in the area were notified by letter, and included Mesa County, Colorado Parks and Wildlife (CPW), the Moab Field Office of the BLM and BLM grazing permittees. No comments were received from Mesa County, the Moab Field Office of the BLM, or grazing permittees. CPW commented to the BLM GJFO in an email dated 06 June 2011. Four (4) issues were identified and pertain to the burrowing owls, pronghorn antelope, closure of routes to public use and an existing water catchment.

Internal scoping was conducted within the BLM GJFO interdisciplinary resource management team. The following issues were identified.

1. Potential impacts to prairie dogs, burrowing owls and kit fox and their habitats. *Impacts to white tailed prairie dogs and burrowing owls will be mitigated by surveys and/or Timing Limitations regarding surface disturbance. Potential impacts to kit foxes will be reduced by prohibiting public access to newly constructed roads. Pipeline and road locations have been amended to limit disturbance and pipelines will follow road alignments.*
2. Potential impacts to pronghorn antelope habitat and winter concentration area. *Reclamation will focus on restoring appropriate native shrubs, grasses, and forbs. The water catchment near the #6-6 location will be cleaned out and restored to function.*

3. Potential impacts to ephemeral drainages and fragile desert soils at the proposed Thomas #5 well location. *An expectation of successful surface reclamation is realistic, given the good native seedbank, shallow slopes with aspects to the east and north, as well as proposed and required state-of-the art reclamation plans and BMPs.*
4. Old juniper trees at the NE/NW corner of the proposed Ezra #3 well pad. *Mitigation measures will require avoidance of the trees.*
5. Location of the Ezra #3 pipeline should be along the east side of the existing road to reduce tree removal. *Mitigation measures will require this, unless safety considerations preclude (e.g. pipelines should not be installed in fill downhill of the road).*
6. Lease stipulation 13EC COC-65156 (wells Federal #6-6 and Lee #2) to protect black-footed ferret. *Potential impacts to black-footed ferrets and related sensitive species will be mitigated by surveys and/or Timing Limitations regarding surface disturbance.*
7. BLM and CPW identified a cliff nest near proposed Ezra #3 location. *Nests in adjacent cliffs and trees were identified as corvid and raven nests. No raptor nests were identified during the raptor nest survey conducted for these areas on May 4th and 5th, 2011.*
8. Heavy cheat grass at the #6-6 prompts weed management and fire hazard concerns. *Mitigation measures require treatments to reduce fire hazards while replacing invasive species with seeded native species.*
9. Pasture fence crosses through the proposed Federal #6-6 well location. *Mitigation measures discussed in EA provide fence adjustment guidelines.*
10. Reclamation would need to be fenced to exclude cattle. *Included in mitigation measures.*
11. Relocate Lee #2 well pad to avoid impacts to high quality sagebrush habitat. Road/pipeline alignment should be via existing two-track. *Proposed action (APD) amended to address these concerns following onsite inspections.*
12. Move or clean cattle guard on MCR 1.60 RD near Thomas #5. *Standard mitigation measures address this, and EA discusses alternate route for heavy vehicles.*
13. Steep drop in loose soils adjacent to proposed reserve pit for Thomas #5. *SEV has informed BLM that they will drill with a closed loop rig and will not build a liquids or reserve pit.*

The Grand Junction Field Office completed an Environmental Assessment and reached a Finding of No Significant Impact.

RATIONALE: I have considered the potential intensity/severity of the impacts anticipated from my decision to approve Southwestern Energy Ventures' Four Desert Wells Ezra #3, Thomas #5, Lee #2 and Federal 6-6. Issues identified in the internal scoping related were analyzed and mitigated as necessary. This project may have minor adverse and short term impacts to air, soils,

water, wildlife, visual, transportation, and invasive species. However, with the incorporation of mitigating measures, these impacts would be limited primarily to the construction period and are not significant. This project will add marginally to the social change already occurring in the region. No significant cumulative impacts would occur. As proposed with the design criteria and attached mitigation, there would be no effect on the current status or trends for the Public Land Health Standards. Other items considered are documented in the FONSI for the action.

MITIGATION MEASURES: Standard and Site-Specific Conditions of Approval are attached.

PROTEST/APPEALS: This decision shall take effect immediately upon the date it is signed by the Authorized Officer, and shall remain in effect while any appeal is pending unless the Interior Board of Land Appeals issues a stay (43 CFR 2801.10(b)). Any appeal of this decision must follow the procedures set forth in 43 CFR Part 4. Within 30 days of the decision, a notice of appeal must be filed in the office of the Authorized Officer at Grand Junction Field Office, 2815 H Road, Grand Junction, Colorado, 81506. If a statement of reasons for the appeal is not included with the notice, it must be filed with the Interior Board of Land Appeals, Office of Hearings and Appeals, U.S. Department of the Interior, 801 North Quincy St., Suite 300, Arlington, VA 22203 within 30 days after the notice of appeal is filed with the Authorized Officer.

An approved Application for Permit to Drill (APD), which includes the components described in Onshore Order No. 1, would be issued under Onshore Oil and Gas Regulations (43 CFR 3160), with the right of appeal.

NAME OF PREPARER: Julia Christiansen, Natural Resource Specialist

 2-13-12

NAME OF ENVIRONMENTAL COORDINATOR: Collin Ewing 

DATE: ~~12/23/2011~~ 2/13/12

SIGNATURE OF AUTHORIZED OFFICIAL:


Grand Junction Field Manager

DATE SIGNED:

ATTACHMENTS:

Mitigation Measures:

- Grand Junction Field Office Standard Conditions of Approval
- Site-Specific Conditions of Approval

Grand Junction Field Office Standard Conditions of Approval (COAs)

The following Standard Surface Use COAs apply in addition to all stipulations attached to the respective Federal leases and in addition to any Site-Specific COAs for individual well pads, pipelines and roads.

1. Administrative Notification. The operator shall notify the BLM representative at least 48 hours prior to initiation of construction or any reclamation. If requested by the BLM representative, the operator shall schedule a pre-construction meeting, including key operator and contractor personnel, to review all lease stipulations and conditions of approval (COAs), prior to initiation of surface disturbance.
2. Other Permits. This authorization is contingent upon receipt of and compliance with all appropriate federal, state, county, municipal and local permits, including all necessary environmental clearances and permits (Colorado Oil and Gas Conservation Commission, Colorado Division of Wildlife, U.S. Fish & Wildlife, Colorado Department of Transportation, Colorado Department of Health & Environment, County Health and Road Departments, etc.) before commencing any work under this permit. Without all such clearances and permits, this permit shall be in non-compliance. Operator shall assume all responsibility and liability related to potential environmental hazards encountered in connection with work under this permit.
3. Existing Uses. The operator shall obtain agreements allowing construction with all existing rights-of-way holders, authorized users and pipeline operators, prior to surface disturbance or construction of the location or access across or adjacent to any existing or approved rights-of-way or pipelines.
4. Fire. The operator shall implement measures to prevent fires on public or private land and will be held responsible for the costs of suppressing fires on public lands that result from the actions of its employees, contractors, or subcontractors. Range or forest fires will be immediately reported to the BLM Field Office. All fires or explosions that cause damage to property, equipment, loss of oil or gas, or result in injuries to personnel will be reported to the BLM Grand Junction Field Office at 970-244-3000. During conditions of extreme fire danger, surface use operations may be either limited or suspended in specific areas.
5. Pre-Construction and Limit of Disturbance. Before surface disturbance, stakes, snow fence or flagging shall be installed to mark boundaries of permitted areas of disturbance, including pre-construction BMPs and soils storage areas. As necessary, slope, grade, and other construction control stakes shall be placed to ensure construction in accordance with the Surface Use Plan. All boundary markers shall be maintained in place until final construction cleanup is completed. If disturbance boundary markers are disturbed, they shall be replaced before construction proceeds.
6. Vegetation Removal, Topsoil Stripping and Storage. Prior to construction of well pads, pipelines, roads, or other surface facilities, areas of such approved activities shall be cleared of brush and trees.

Timing Limitation: New surface disturbance, especially vegetation removal, shall not be allowed between May 15 and July 15, to prevent potential taking of migratory birds and/or eggs, unless otherwise approved in writing by the BLM. If surface disturbance is proposed during this period, a migratory bird survey shall be required following submittal of a written request for exception before any surface disturbance occurs. If vegetation removal is completed before May 15, exception to this rule may be granted.

Chip in place all woody material, then salvage and store with topsoil. **OR** Chip/ evenly scatter woody materials smaller than 4 inches in diameter. Larger woody material shall be cut in pieces and removed from public land (as firewood, fence posts, etc.). No stump over 6 inches in height shall be left in place. Stumps may be buried or scattered in areas specified by the BLM, such as a toe slope or perimeter berm for topsoil or stormwater control.

All trees directly outside the staked perimeter of construction shall remain undamaged and left standing unless removal is specifically directed by the BLM.

When saturated soil conditions exist on access roads or pads, construction shall halt until soil material dries or thaws or until construction can proceed without soil damage. No topsoil shall be stripped when soils are saturated or frozen below the stripping depth.

All topsoil shall be stripped following removal of vegetation. In areas of thin soil, at least the upper 6 inches of surface material shall be stripped. Stripped topsoil and vegetation smaller than 4 inches in diameter shall be stored separately from other excavated material and replaced prior to final seedbed preparation. The BLM best management practice (BMP) for the Windrowing of Topsoil shall be implemented for well pad construction whenever topography allows (refer to the BLM 2009 PowerPoint available upon request). Along pipelines and roads, topsoil shall be wind-rowed, segregated and stored for later redistribution across disturbed corridors during reclamation. Topsoil storage piles, stormwater control features, and cut-and-fill slopes shall undergo temporary seeding within 30 days, to stabilize materials, maintain biotic soil activities and minimize weeds.

7. Construction and 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 BMPs and 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 site-specific BMPs designed to minimize the potential for erosion and sediment transport. On steep or slumping slopes, BLM may require professional geotechnical analysis prior to construction approval.
8. Temporary seeding to stabilize materials, maintain biotic viability and suppress weeds shall take place within 30 days of pad construction. Topsoil, stormwater control features, temporarily disturbed areas along roads/ pipelines, and cut and fill slopes shall undergo seeding. Seedbed preparation is not generally required for topsoil storage piles or other areas of temporary seeding. Temporary seeding may allow use of an approved seed mix containing one or more sterile hybrid grasses or other non-native cover crop in addition to native perennial species.

9. Road Construction and Maintenance. Roads shall be crowned or sloped, ditched, surfaced, drained with culverts and/or water dips, and constructed to BLM Gold Book standards. Culverts shall be installed on grade and outlets shall incorporate controls such as angular rip-rap, sediment catchments and anchored straw bales, to slow water velocity and prevent erosion and sediment transport. If applicable, initial gravel application shall be a minimum depth of 6 inches.

The operator shall provide timely maintenance and cleanup of roads. A regular schedule for maintenance shall include, but not be limited to, crown or slope reconstruction, blading, ditch, culvert and catchment cleaning, road surface replacement, and dust abatement. When rutting within the traveled way becomes greater than 5 inches, maintenance such as blading, and/or gravelling shall be conducted as approved by the BLM. Road drainage features shall not be flat-bladed with soil berms left along roadsides, but soil shall be built back into the travelway and road drainage features restored as needed. Ditches shall be allowed to vegetate and/or shall include large rocks or stones to slow the velocity of drainage and allow sediment to settle out. Seeding ditches is recommended where soils are fragile/erodible.

10. Pipelines: Buried pipelines shall have a minimum cover of 48 inches in a roadway and at road crossings, 36 inches through typical soil and rock, and 24 inches in areas requiring rock blasting. The holder is responsible for burying a pipeline to a depth that safely accommodates existing land and road uses and maintenance.

Pipeline warning signs permanently marked with the operator's and owner's names (emergency contacts) and purpose (product) of the pipeline shall be installed within five days of construction completion and prior to use of the pipeline for transportation of product. Pipeline warning signs are required at all road crossings and along the alignment, visible from sign to sign.

11. Dust Abatement. The operator shall implement dust abatement measures as needed to prevent fugitive dust from 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 materials) if dust abatement measures are insufficient. BLM approval is required before application of surfactants or dust agents.

Speed control measures on all project-related unpaved roads shall also be implemented to reduce fugitive dust. More stringent dust control may be required in areas adjacent to Federal- or State-listed threatened, endangered, or sensitive plant species.

12. Drainage Crossings and Culverts. Within 100 feet of stream channels, the following will be used along roads: erosion protection and silt retention BMPs, including construction of silt catchments, installation of culverts or drainage dips, placement of surface rock on approaches to stream crossings, placement of surface rock, straw bales, and/or matting.

In areas within 100 feet of an intermittent drainage, an adequate vegetative buffer, artificial buffer, (straw bales, matting, etc.), or filter strip will be maintained between the road and the drainage, to minimize sediment transport into the drainage. Construction activities at perennial, intermittent, and ephemeral drainage crossings (e.g. burying pipelines, installing culverts) shall be timed to avoid high flow conditions.

Culverts at drainage crossings shall be designed and installed to at least pass a 25-year or greater storm event, but due to the flashy nature of area drainages and anticipated culvert maintenance, the U.S. Army Corps of Engineers recommends designing drainage crossings for the 100-year event. Contact the USACE Colorado West Regulatory Branch at 970-243-1199 ext. 17 (Travis Morse). 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 and capacity.

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

13. Jurisdictional Waters of the U.S. The operator shall obtain appropriate permits from the U.S. Army Corps of Engineers 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. (970-243-1199 x16 or susan.nall@usace.army.mil)
14. Wetlands and Riparian Zones. The operator shall restore temporarily disturbed wetlands or riparian areas. Consult with the BLM to determine appropriate mitigation, including verification of native plant species to be used in restoration. Contact the Grand Junction Field Office at 970-244-3000 or at cstark@blm.gov.
15. Range Management. Damage to range improvements (fences, gates, reservoirs, pipelines, etc.) shall be avoided during development of oil and gas resources. If range improvements are damaged during exploration and development, the operator shall repair or replace the damaged range improvements. If a new or improved access road bisects an existing livestock fence, a steel frame gate or a cattleguard with bypass gate shall be installed across the roadway to control grazing livestock.
16. Pits. All pits that may contain liquid material shall be lined to prevent seepage into the ground. To prevent seepage into the ground, the pit liner must remain intact and in good working condition, with no tears or holes, until the pit is backfilled.

Pits shall be constructed to prevent entry of surface precipitation runoff and to maintain at all times 2 feet of freeboard between the maximum fluid level and the lowest point of containment. If exceedance of the freeboard requirement appears likely, immediately

notify the BLM and halt further introduction of additional fluid until they can be removed or until alternate containment methods can be approved and installed. Fluid-containing pits shall be fenced on three sides prior to drilling activity and closed off on the fourth side after drilling is finished. Fencing shall be adequate to preclude entry by livestock, unless otherwise specified by BLM.

In areas where the BLM wildlife biologist determines that pits threaten harm to big game and other wildlife, fencing for pits and other facilities shall be 8-foot woven wire with adequate bracing. The bottom two feet shall include mesh sized to preclude small animals from entering. All fence construction shall be on cut or undisturbed ground and fences shall be maintained in a livestock tight condition (BLM Handbook H-1741-1, p. 16).

If any reserve, evaporation or holding pit is constructed with a side slope steeper than 3:1, or if the pit is lined, escape ramps designed to allow all animals to escape the pit shall be installed every 50 feet along the pit slope and at each corner. An acceptable escape ramp would be a section of galvanized chain-link fence at least 24 inches wide anchored at the pit bottom and extending to the top of the pit and across the top edge of the pit liner.

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, collect, or 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, hydraulic fracturing flowback pits, cuttings trenches (if covered by water or other fluid), and evaporation pits. Liquids in these pits may pose a risk to migratory birds as a result of ingestion, absorption through the skin, or chemical interference with buoyancy and temperature regulation. Regardless of the exclusion method used, it shall be in place within 24 hours following the placement of fluids into a pit. Oil slicks and oil sheens shall immediately be removed from any pit. Prompt drainage, closure, and reclamation of pits is the most effective protection for migratory birds. Any pit open for more than 30 days will be netted sufficiently to preclude entry by migratory birds. All bird mortality or injury shall be reported immediately to the BLM and to the USFWS representative Creed Clayton at 970-876-9051. Further information is available at: <http://www.fws.gov/mountain-prairie/contaminants/oilpits.htm>.

Pits shall be dry prior to soil testing and backfilling and closed per all applicable standards/regulations. Before backfilling, remove, clean and properly dispose of pit liner. No liquids or solids collected on/in the liners shall be allowed to contact the pad surface, parent soils or any other earthen layers during site cleanup. Liners may be washed off into lined ditches, sumps or cellar prior to being pumped out and removed. At the time of backfilling, all muds and associated solids shall be confined to the pit, with none squeezed out or incorporated into surface materials. A minimum of 4 feet of cover (overburden) is required above any muds or solids. When work is complete, the pit area must support the weight of heavy equipment without subsidence.

17. Production: Production facilities shall be located and arranged to facilitate safety and maximize interim reclamation opportunities, e.g., located at the access road end of the pad, with tanks in cut. Access to facilities should be provided by a teardrop-shaped road through the production area, to clearly limit and define the driving area, and so that the center may be revegetated.

All installed production facilities, (e.g. storage tanks, load-outs, separation/ treating units,) that have the potential to leak or spill oil, condensate, produced water, glycol, or other fluid which may constitute a hazard to public health or safety shall be placed within appropriate secondary containment structures. Containment shall hold 110% of the capacity the largest single container within it and be impervious to any oil, glycol, produced water, or other fluid for at least 72 hours.

Chemical containers shall be clearly labeled, maintained in good condition and placed within secondary containment, for protection against spill or puncture. They shall not be stored on bare ground, nor exposed to sun and moisture.

To blend with the natural environment, all permanent above-ground facilities placed on the location shall be painted as directed by the BLM, in a non-reflective finish.

18. Recontouring and Reclamation: Interim reclamation, to reduce a well pad to the minimum size needed for long term production, shall be completed within 6 months following completion of the last well planned for the pad or after a year has passed with no new wells drilled. Deadlines are subject to extension, on a case-by-case basis, following application in writing to the BLM.

Prior to any reclamation of a well pad or access road, an inspection of the disturbed area shall be held to review the existing reclamation plan or agree to an updated plan. Contact the Grand Junction Field Office at 970-244-3000 or at julia_christiansen@blm.gov.

The Grand Junction Field Office shall be notified at least 48 hours prior to commencing any reclamation work and within 48 hours of completion of reclamation work.

Prior to interim reclamation, the operator shall meet with BLM to inspect the disturbed area, review the existing reclamation plan, and agree upon any revisions to the plan. The objectives of interim reclamation are to return the disturbed area to productive use and meet the objectives of the resource management plan, such as restoring landform, maintaining healthy, biologically active topsoil; controlling erosion and sediment transport; and minimizing losses of habitat, visual resources, and forage throughout the life of the project. Interim reclamation will be considered successful when disturbed areas not needed for long-term production operations have been recontoured and stabilized; revegetated with a self-sustaining, vigorous, diverse, native (or otherwise approved) plant community that minimizes visual impacts, provides forage and stabilizes soils. Seeded species will be considered firmly established when at least 50 percent of the new perennial plants are producing seed.

a. *Deadline for interim reclamation earthwork and seeding.*

Interim reclamation shall reduce well pads and roads to the size needed for production and reshape disturbed lands and excess spoil piles to approximately natural contours within 6 months after completion of the last well planned for the pad or after a year has passed with no new wells drilled. Deadline is subject to extension on a case-by-case basis upon approval of the BLM, based on season, timing limitations, or other constraints. Submit application for extension in writing to the BLM. If an extension is granted, temporary surface stabilization (hydro-mulch, erosion matting, etc) may be required.

b. *Recontouring and seedbed preparation.*

For compacted areas, initial recontouring and seedbed preparation shall include ripping to a minimum depth of 18 inches, at a furrow spacing no larger than 24 inches. Where possible, rip in two passes at perpendicular directions. After breaking up compaction, restore fill slopes to cuts, blending them to natural contours or shaping materials into large 'natural' berms that provide visual and stormwater benefits. Cover all backfilled, ripped, contoured or otherwise disturbed surfaces evenly with salvaged topsoil. Soil amendments may be required if topsoil is inadequate. Scarify/roughen the spread topsoil within 24 hours before seeding, to break up any soil crust that has formed.

c. *Seed Mixes.*

A seed mix approved by BLM in advance of planting shall be used on all BLM lands affected by the project. Percent composition of each species in the mix shall be calculated based on the number of Pure Live Seed (PLS) per pound rather than percentage by weight. Seeding rate (pounds PLS per acre) shall be based on the total number of PLS seeds per square foot. Only viability-tested, certified seed for the current year, with a minimum germination rate of 80% and a minimum purity of 90% shall be used unless otherwise approved by BLM in advance of purchase. Seed shall contain no noxious, prohibited, or restricted weed seeds and shall contain no more than 0.5 percent by weight of other weed seeds. 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.

d. *Seeding procedures.* Seeding shall be conducted no more than 24 hours following completion of final seedbed preparation. Where practical, seed shall be drilled to a depth of 0.25 to 0.5 inch. Where drill-seeding is impractical, 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 hydro-seeding and hydro-mulching. Hydro-seeding and hydro-mulching shall be conducted in two separate applications to ensure adequate contact of seeds with the soil. If revegetation is unsuccessful, the operator shall implement subsequent reseeding until interim reclamation standards are met.

e. *Site Protection.* The reclaimed pad shall be fenced to exclude livestock grazing for the first two growing seasons or until seeded species are firmly established, whichever comes later. The four strand fence shall have smooth top and bottom wires. Distance from the ground to the bottom smooth wire shall be no less than 16 inches. Distance from the

top wire to the second wire shall be no less than 12 inches. Middle wires shall be barbed, with 6 inch spacing. Seeded species will be considered firmly established when at least 50 percent of the new plants are producing seed.

f. Mulch. Mulch shall be applied within 24 hours following completion of seeding. Mulch may consist of either hydro-mulch or of certified weed-free straw or certified weed-free native grass hay crimped into the soil. (Mulch is not required in areas where erosion potential mandates use of a biodegradable erosion-control blanket.)

g. Erosion Control. Cut-and-fill slopes shall be protected against erosion with the use of contouring, swales, water bars, lateral furrows, pocking/pitting of the soil surface, or other measures approved by the BLM. Biodegradable matting, bales, or wattles of weed-free straw or weed-free native grass hay or additional BMPs shall be employed as necessary to reduce erosion and offsite transport of sediment, especially in areas along drainages or in soils with high erosion potential.

h. Monitoring. The operator shall conduct at least annual monitoring surveys of vegetative cover and invasive species at all sites categorized as “operator reclamation in progress” and shall submit an annual monitoring report of these sites to the BLM by December 31 of each year. The annual report shall document whether attainment of reclamation objectives appears likely. If one or more objectives appears unlikely to be achieved, the report shall identify appropriate corrective actions.

APPLICATION RATES

<u>Species</u>	<u>PLS – Pounds per Acre</u>
Arriba Western wheatgrass	2.2
Sodar Streambank wheatgrass	2.2
Scarlet Globemallow	0.5
Paloma Indian ricegrass	2.4
Rincon or Native Four-wing saltbush	2.0
<u>Shadscale</u>	<u>1.0</u>
	10.3 lbs. PLS/acre Total

19. Weed Control. The operator shall regularly monitor and promptly control noxious weeds or other undesirable plant species as set forth in the joint BLM/Forest Service *Noxious and Invasive Weed Management Plan for Oil and Gas Operators* (March, 2007). A Pesticide Use Proposal (PUP) must be approved by the BLM prior to the use of herbicides. Annual weed monitoring reports shall be submitted by **December 1**. Contact weed manager Mark Taber at the Grand Junction Field Office, at 970-244-3004 or Mark.Taber@blm.gov.

20. Visual Resources. To reduce visual impacts at the **Federal #6-6, Lee #2 and Ezra #3**, all structures, including but not limited to long-term storage tanks, shall be no taller than 12 feet. At all locations, facilities shall be designed to be as low-profile as possible, with every practical effort made to prevent tanks or facilities from protruding above adjacent

ridgelines. Requests for exceptions shall be made in writing to the Grand Junction Field Office.

Pads, roads, pipelines and production facilities shall be located and 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 interim reclamation.

Ground disturbing activities around the **Lee #2** pad site shall be limited to the area below the naturally occurring ridge on the east and north sides.

To the extent practical, 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.

Fill slopes of the **Thomas #5 and Lee #2** pads shall implement regional rock and rough finishing, to reestablish landform texture and facilitate successful reclamation. Rock shall be of the same type and color and not larger than surrounding area surface stones.

Aboveground facilities at **the Federal #6-6 and Thomas #5** shall be painted BLM standard environmental color "**Carlsbad Canyon**" brown in a non-reflective finish, to minimize contrast with the background landscape as viewed from key observation points. Aboveground facilities at the **Lee #2 and Ezra #3** shall be painted BLM standard environmental color "**Shale Green**" in a non-reflective finish.

To mitigate straight-line visual contrast effects of cut/ fill slopes, pad margins or cleared vegetation, adaptive management techniques may be required by BLM staff before or after construction. This could include additional tree removal along contrasting edges, to create irregularly shaped openings or more natural-looking mosaic patterns, or treating visually contrasting surfaces to mitigate differences in color or surface texture.

21. Paleontological Resources. All persons associated with operations under this permit 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. The discovery must be protected until notified to proceed by the BLM. The BLM will, as soon as feasible, have a BLM-permitted paleontologist check out the find, recording and collecting 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.
22. 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.

1. Pursuant to 43 CFR 10.4(g), the BLM authorized officer 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 authorized officer to proceed.
2. If, in connection with operations under this permit, 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 authorized officer 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 authorized officer. Approval to proceed will be based upon evaluation of the resource and shall be by a qualified professional selected by the BLM authorized officer from a Federal agency insofar as practical. When not practical, operator bears the cost of services of a non-Federal professional.
3. Within five working days, the BLM authorized officer 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 authorized officer 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 authorized officer 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 authorized officer will provide technical and procedural guidelines for relocation and/or to conduct mitigation. Upon verification from the BLM authorized officer 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).

Site-Specific Surface Conditions of Approval
DOI-BLM-CO-130-2011-0038-EA

The following surface use Conditions of Approval (COAs) apply in addition to all standard stipulations attached to the respective Federal leases and in addition to any standard COAs for individual well pads, pipelines and roads.

1. Timing Limitation – Lee#2 and Federal 6-6. Construction, drilling, work-overs and other intensive or surface disturbing activities are prohibited January 1 through March 1 to protect pronghorn antelope in their winter concentration area.
2. Timing Limitation – Prairie Dog Colonies. From Mar 15 thru Oct 31, no construction shall occur within 150 feet of prairie dog towns, to protect sensitive wildlife species.

If the operator proposes to construct during this limited timeframe, burrowing owl surveys must first be conducted to confirm absence of the species prior to construction or any disturbance. Should burrowing owl nest sites be detected within 150 feet of the construction area, no construction or human encroachment may occur between March 15 and October 31.

Burrowing owl surveys shall be conducted by a BLM-approved wildlife biologist. Approval of a bio-surveyor and notification of the operator's intent to survey shall be provided to the BLM field office biologist at least a week prior to the intended survey start. Surveys will be conducted according to CPW established protocols, available from the BLM wildlife biologist (please note that a survey to document the absence of burrowing owls requires three visits at least one week apart). Contact Heidi Plank at 970-244-3012, Heidi.Plank@blm.gov.

Construction and other surface disturbing activities such as pad construction and road maintenance shall be prohibited April 1 to July 15, the pupping season for the white tailed prairie dog. Any construction and road maintenance during this time period will require prior surveys to determine whether prairie dog towns to be disturbed are active.

3. Prairie Dog Colonies. Staging and parking activities shall be located outside of the prairie dog colonies and occur only in permitted areas.

Limit all vehicle traffic to roadways only, no off-road travel shall be allowed.

Any construction or road widening/upgrading between April 1 and July 15 requires pre-approval by the BLM and may require biological surveys regarding impacts to active prairie dog towns.

4. Limit of Disturbance. Before construction begins, stakes, snow fence or flagging shall be installed to mark boundaries of all permitted areas of disturbance. As necessary, slope, grade, and other control markers shall be placed to ensure construction in accordance with the approved Surface Use Plan and permit COAs. All boundary markers shall be maintained

in place until final construction cleanup is completed. If disturbance boundary markers are disturbed, they shall be replaced before construction proceeds.

The edge of the **Ezra #3 well pad** shall be routed around old juniper trees at the pad corner and marked for avoidance with stakes, snow fence or flagging.

5. Pre-Construction. A pre-work meeting including the BLM surface specialist, the operator and the equipment workers is required prior to disturbance, to discuss site specific concerns and adherence to COAs. Contact Julia Christiansen at 970-244-3093.
6. Construction and Maintenance. To protect and stabilize known fragile soils and ephemeral drainages, special design and reclamation practices are necessary to avoid unacceptable impacts to soils and vegetation. Especially at the **Lee #2, Ezra #3 and Thomas #5**, BMPs such as shallower slopes, erosion control fabric and immediate seeding shall be site-specifically designed and implemented to restore vegetation and prevent erosion/ sediment transport. All BMPs shall be routinely monitored and maintained.

To reduce impacts to soils and vegetation, use state-of-the-art desert stabilization techniques:

- proper topsoil/woody debris salvage and storage (shallow, stable, located as closely as possible to removal site, especially in areas with good native seed banks (e.g. the **Ezra #3 and Thomas #5** locations);
- redistribution of all topsoil at interim reclamation;
- excess soils storage piles contoured naturally, stabilized and seeded
- seedbed preparation such as pocking soils with micro-basins scaled to the site;
- seeding with tested, certified, weed-free seed;
- mulching;
- frequent weed monitoring and appropriate control;
- exclusion of cattle from reclaimed areas;
- continuing monitoring and maintenance as required by conditions at the sites.

7. Topsoil Removal and Storage. All growth medium above subsoils, at least the upper 6 inches of soil and vegetation, excluding whole brush, shall be stripped from the pad site and linear features, and then stored separately from other excavated materials, to be replaced prior to seedbed preparation.

Topsoil shall typically be stripped from the pad center outward to the pad edges and bermed as part of the construction/stormwater boundary. Large woody and vegetative debris may be stored at berm toeslopes along outside perimeters. Topsoil berms shall be no deeper than 4 feet and be protected from wind/ water erosion. Seeding or erosion blankets are options for immediate stability. Extremely loose soils may require some compaction (e.g. track-walking the berms) just before seeding. Stored topsoil shall be seeded immediately, or at least within 24 hours of completed pad construction.

8. Road and Pipeline Construction. Should a BLM right-of-way grant be required, it shall be obtained before any construction and maintenance.

New access road disturbance shall be no more than 25 feet in width, including ditches, with a 16 to 18-foot travelway.

Where a new road and pipeline are constructed together, total disturbance width shall not exceed 50 feet.

In areas where pipelines are to be installed along an existing roadway, no more than an additional 25 feet of width shall be disturbed. Request for exception may be made by Sundry Notice to the BLM Grand Junction Field Office.

Existing hardened two-track roads approved for access to well Ezra #3 shall not be upgraded or widened (10-12 feet is current width).

9. Low-Water Crossing Construction – Lee #2, Thomas #5. Armor all low stream water crossings with suitably-sized (at least 4-5”) native angular rock, including the crossing bottom and approaches, to protect existing drainages in fragile and erodable soils. Routinely monitor and maintain.
10. Stormwater Management – Lee#2: Surface runoff from the Lee #2 shall remain in the same hydrologic drainage as the disturbance. No storm water or any other fluids shall be allowed to flow from Lot 9 into Lot 8 and into the drainage basin that provides water to two wildlife/stock ponds in Sections 8 and 20 to the south and east of the pad.
11. Traffic Control. All existing BLM road signs, “Closed to the Public - Administrative Use Only,” shall remain in place throughout the life of the project, being replaced as needed.

All new access roads shall be posted “Closed to the Public – Authorized Personnel Only” and maintained as needed. Notify BLM regarding replacement of BLM signs at 244-3047.

12. Pits. All open top tanks and pits shall be covered with bird netting, or other system designed to eliminate any hazard to birds and flying mammals (CERCLA Section 101(14)).

Any liquids pit shall be fenced and the bottom two feet of pit fence lined with wire mesh to prevent small animals from entering the pit.

13. Range Management. Install solid railings or fencing around equipment that could be damaged by or could injure livestock.

Install signs dictating opening/closure of livestock/pasture gates on project roads. Alternatively, cattle guards could be installed in place of gates. Contact Scott Clarke at 970-244-3000.

The stock pond next to the **Federal #6-6** location shall be cleaned out and made functional. A pre-construction meeting including a BLM range conservationist shall be held onsite to discuss fence move and pond clean-out. Contact Scott Clarke at 970-244-3000.

14. Reclamation. Interim and final reclamation shall restore pronghorn antelope and prairie dog habitat by reseeding native shrubs, grasses, and forbs appropriate to the ecological site disturbed. Contact Julia Christiansen or Anna Lincoln at 970-244-3000.
15. Reclamation Protection. At the conclusion of construction and reclamation activities, (pipeline, closure of previous access road, interim reclamation) install controls to prevent vehicle access in areas where reclamation is located adjacent to existing roads. Such controls may include fencing, large rocks and signs. Contact Chis Pipkin at 970-244-3000.
16. Weeds/ Fire Prevention – Federal 6-6. Cheat grass within 300 feet of areas that will have any disturbance or could be affected by heat-producing equipment (e.g., production facilities, vehicle exhausts) shall be treated with Plateau™ herbicide, then seeded with a native perennial grass mix appropriate to the site. Treatment should be done using a spray bar on an ATV or by backpack pump only if slopes exceed 30% or are too rocky to drive. Treatment must be completed between December 1st and February 15 during the winter before disturbance is planned, when grass is all germinated but has not yet begun to shoot up and grow. A Pesticide Use Proposal (PUP) must be pre-approved by the BLM. Contact fire manager Russell Long at 970-244-3000 (rblong@blm.gov) or weed manager Mark Taber at 970-244-3004 (mtaber@blm.gov).