ENVIRONMENTAL ASSESSMENT #CO-800-2006-054

KINDER MORGAN PROPOSED
WELL SITES HF-3 and SC-11

Well Site HF-3

Well Site SC-11

Project Applicant:
Kinder Morgan
17801 Highway 491
Cortez, CO 81321

Prepared for:
U. S. Department of Interior
Bureau of Land Management
27501 Highway 184
Dolores, CO 81323

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1.0 PURPOSE AND NEED FOR ACTION

1.1 Introduction

Kinder Morgan CO_2 Company, LP (Kinder Morgan) has submitted applications to drill two (2) carbon dioxide (CO_2) gas wells on lands administered by the Bureau of Land Management (BLM), in Montezuma County, Colorado. Specifically, the wells would be drilled on existing federal leases in the McElmo Dome Field within the Canyons of the Ancients National Monument (CANM) approximately 15-20 miles west and northwest of Cortez, Colorado. The two wells are identified as the Kinder Morgan HF-3 and SC-11. (Refer to Figures 1, 2 and 3). One well would be drilled within the Yellow Jacket Unit and one would be drilled in the McElmo Dome Unit. The wells would be vertically drilled with horizontal completions. The legal descriptions, planning units and surface and subsurface ownership for the proposed wells are as follows:

Kinder-Morgan SC-11
Lease Numbers COC-019347, COC-027366
Surface Location (850-feet FNL &1793-feet FWL) – BLM Surface
Bottom Hole Location (1543-feet FSL & 2419-feet FWL) – Federal Minerals
Township 36N, Range 18W, Section 8
Montezuma County, Colorado
New Mexico Principal Meridian

Kinder-Morgan HF-3
Lease Number C-12039
Surface Location (828-feet FNL & 84-feet FWL) – BLM Surface
Bottom Hole Location (2224-feet FSL & 1158-feet FWL) – Federal Minerals
Township 37N, Range 18W, Section 7
Montezuma County, Colorado
New Mexico Principal Meridian

As proposed, the project includes the construction of two well pads (6.18 acres), and associated access roads and flowlines (1.25 acres of disturbance). The gas flowlines would be constructed entirely within the access road ROW and would tie-in to existing gathering pipeline corridors adjacent to each well site. If the wells were unproductive, all surface disturbances would be reclaimed and abandoned according to BLM specifications.

1.2 Purpose and Need

1.2.1 Purpose and Need for the Proposed Development

The BLM manages public lands under a concept of multiple use, including development of mineral resources. The purpose of the proposed Kinder Morgan HF-3 and SC-11 (Proposed Action) is to exercise the Proponent's federal mineral lease rights (C-12039 and COC019347) within the Project Area to drill for, extract, remove, and market gas products and to do so within a reasonable and economical time frame. The Proponent would also execute its rights to build

and maintain necessary improvements, subject to renewal or extension of the lease or leases in accordance with the appropriate authority.

The Federal mineral estate, administered by the BLM as part of its mineral leasing program, provides minerals, including fossil fuels, for the benefit and use of the American public, and encourages development of domestic oil and gas reserves to reduce dependence on foreign energy supplies. Mineral development is supported by the Mineral Leasing Act (1920 30 USC 181 et. seq.), the Federal Land Policy and Management Act (FLPMA), Department of Interior (DOI) policy, the San Juan-San Miguel RMP, and the issuance of leasing rights by the BLM.

The purpose of the proposal is to develop CO_2 gas reserves in the McElmo Dome Field on two (2) oil and gas leases that have been issued by the BLM. The CO_2 gas that would be produced by the proposed action is needed to enhance oil production in the Permian Basin. Produced gas from the proposed action would be moved via existing pipelines to the Permian Basin to meet this market demand. Domestic oil and gas production is needed to meet current domestic demand and to reduce dependence on foreign oil.

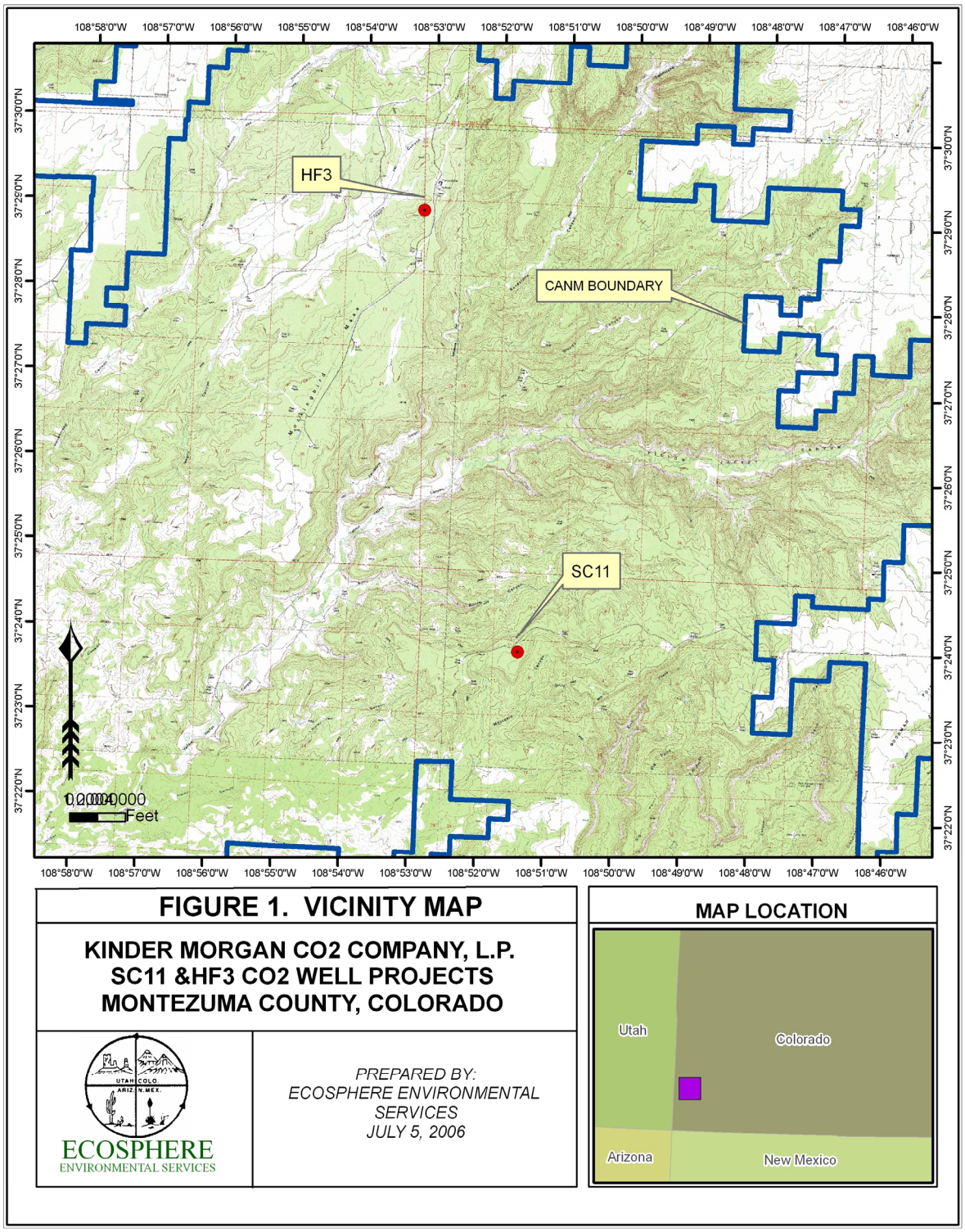
Oil and gas leases issued by the BLM at the direction of Congress (1920 Mineral Leasing Act as amended) are contractual agreements between the U.S. and the lessee. The lease rights granted consist of the right to occupy as much of the lease surface as is reasonable for the extraction of the resource and the right to remove the resource (oil and/or gas).

The proposals include all activities associated with gas development including activities to construct, operate, reclaim, and abandon one well per Application for Permit to Drill (APD). The APDs include associated new access roads and pipelines.

1.2.2 Purpose of the Environmental Analysis Process

The National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347, as amended) (NEPA) requires analysis of the potential environmental affects associated with federal actions. The environmental analysis process is designed to provide the BLM's authorized Decision-maker with information needed to render a decision that is fully informed and based on factors relevant to the proposed Project, in compliance with BLM responsibilities under NEPA. It also documents the analyses conducted on the Proposed Action and alternatives to the Proposed Action in order to identify environmental impacts and mitigation measures necessary to address resource issues.

This Environmental Assessment (EA) is site-specific in nature, i.e., it describes environmental impacts resulting from development of the specific wells and associated facilities on federal surface and mineral estate outside and within the McElmo Dome Unit. Approval of the Proponent's APDs would not require additional NEPA compliance. The EA also provides a vehicle for public review and comment on the Proponent's proposal, the environmental analysis, and conclusions about relevant issues.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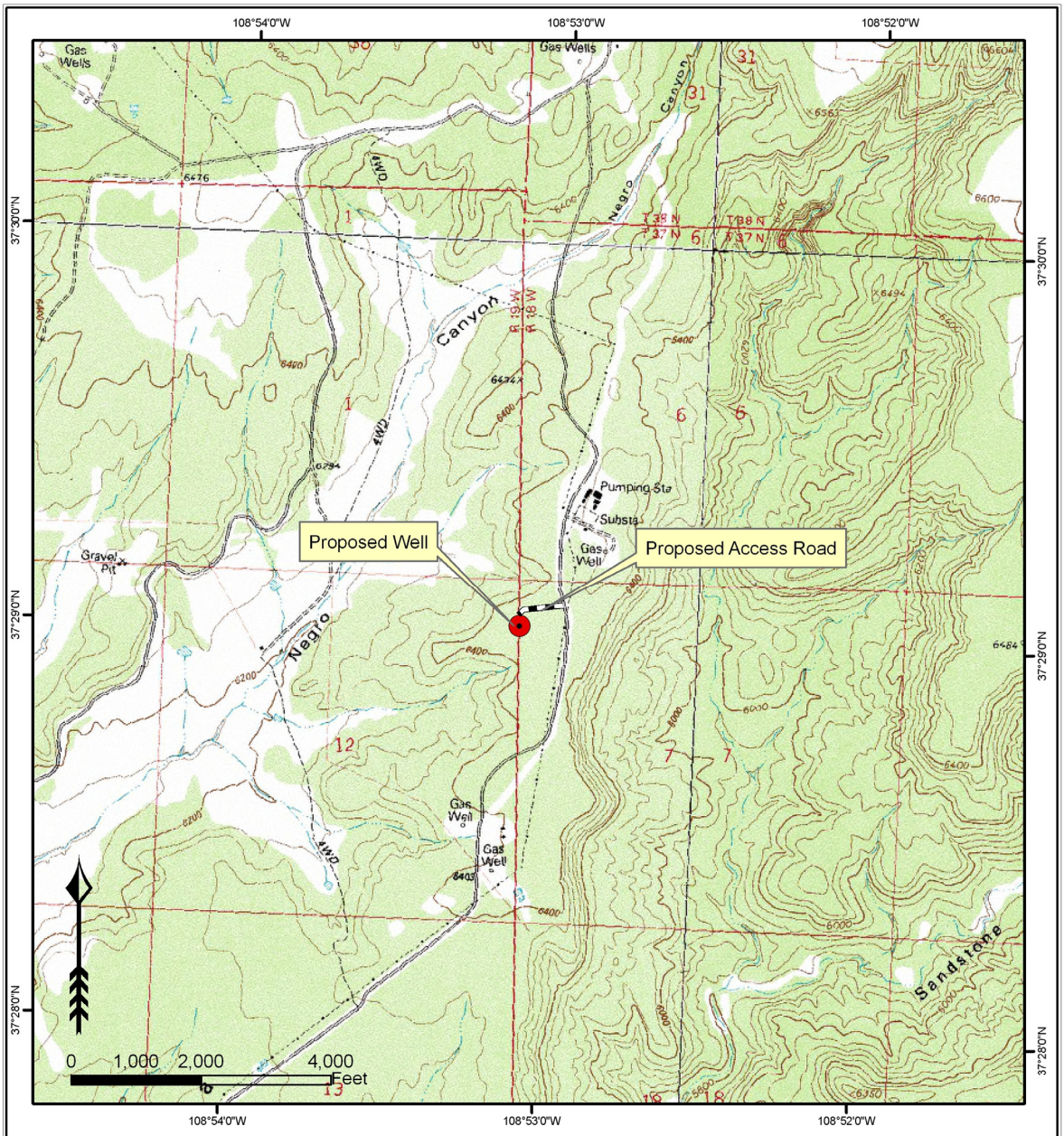
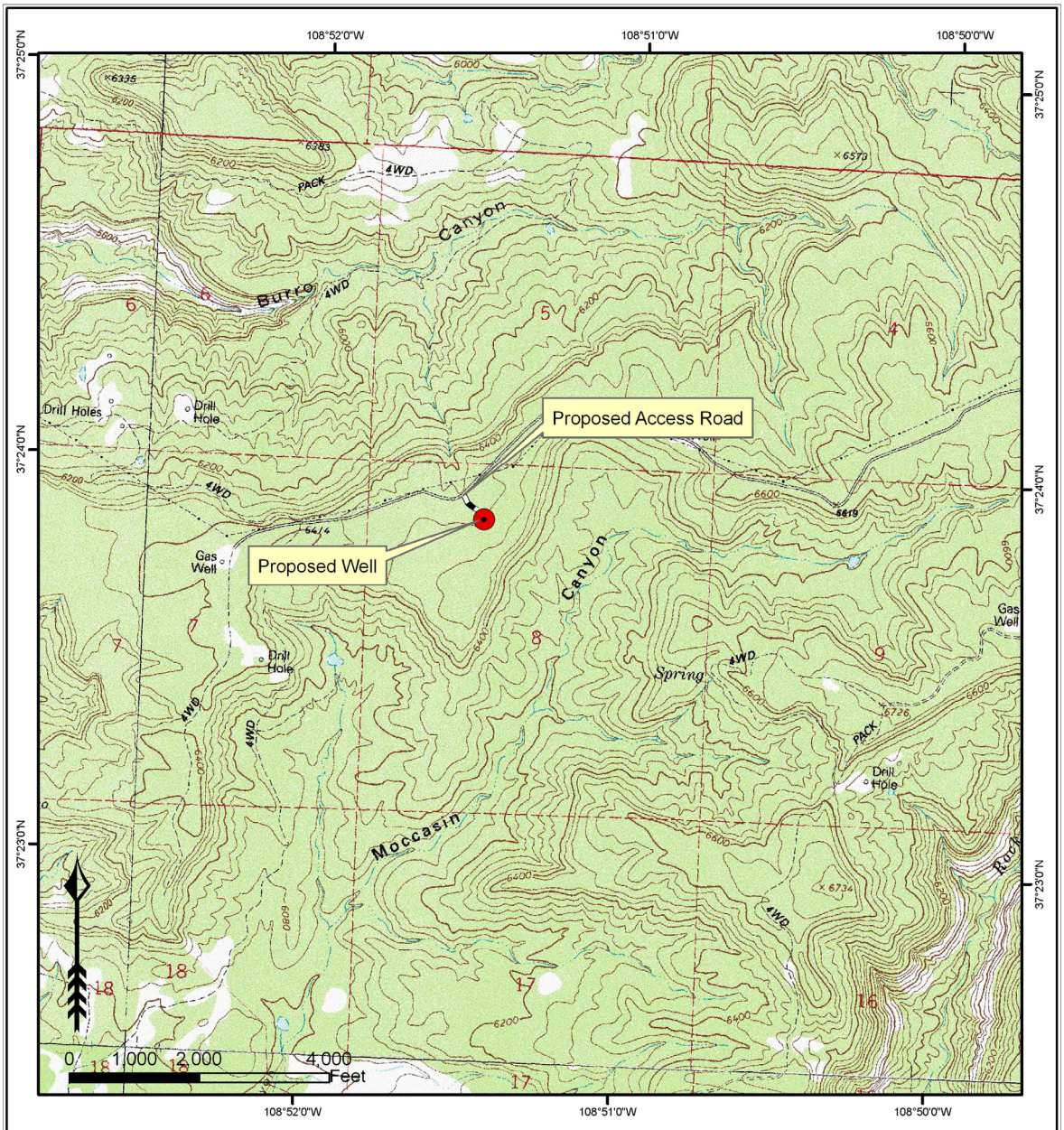
37°26'0"N
37°25'0"N
37°24'0"N
37°23'0"N
37°22'0"N
HF3
CANM BOUNDARY
SC11
Feet
FIGURE 1. VICINITY MAP
KINDER MORGAN CO2 COMPANY, L.P.
SC11 &HF3 CO2 WELL PROJECTS
MONTEZUMA COUNTY, COLORADO
ECOSPHERE
ENVIRONMENTAL SERVICES
PREPARED BY:
ECOSPHERE ENVIRONMENTAL SERVICES
JULY 5, 2006
MAP LOCATION
Utah
Colorado
Arizona
New Mexico



KINDER MORGAN CO2 COMPANY LP	
PROPOSED HF-3 WELL PAD PROJECT	
T 37N, R 18W, SECTION 7	FIGURE 1
NEGRO CANYON QUADRANGLE	PROJECT AREA MAP
MONTEZUMA COUNTY, COLORADO	5/12/2005

ECOSPHERE
ENVIRONMENTAL SERVICES



KINDER MORGAN CO2 COMPANY LP	
PROPOSED SC-II WELL PAD PROJECT	
T 36N, R 18W, SECTION 8	FIGURE 1
WOODS CANYON QUADRANGLE	PROJECT AREA MAP
MONTEZUMA COUNTY, COLORADO	5/12/2005

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1.2.3 Decisions to be Made

Factors which will be considered as a result of the environmental analysis process include:

- A determination of whether the Proposed Action and alternatives are in conformance with the policies, regulations, and approved Resource Management Plan (RMP) of the BLM.
- The selection of environmentally-suitable well locations, access roads, pipelines, and ancillary production facilities that are compatible with other resource activities that minimize resource impacts, yet honor the lease rights within the Project Area.
- The determination of the nature and level of impacts resulting from the Proposed Action and alternatives on the human environment, if conducted in accordance with applicable regulations and lease stipulations, and the development of mitigation measures necessary to avoid or minimize these impacts.

1.3 Relationships to Policies, Plans, and Programs

1.3.1 Conformance with Statutes and Regulations

Exploration and development of federal oil and gas leases by private industry is an integral part of the BLM's oil and gas leasing program under authority of the Mineral Leasing Act of 1920, as amended, the Mining and Minerals Policy Act of 1970 (30 U.S.C. 21), the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1761-1777), the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (30 U.S.C. 195 et seq.), and applicable BLM Onshore Oil and Gas Orders (43 CFR 3160).

BLM regulates oil and gas development so as to minimize environmental impacts to public lands as required by numerous federal laws, including:

- The Endangered Species Act of 1973 (P.L. 94-325),
- The Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703-712),
- The Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. 668-668d),
- The Federal Water Pollution Control Act of 1948, as amended (33 U.S.C. Chap. 26),
- The Clean Air Act of 1963, as amended (P.L. 88-206),
- Clean Water Act of 1972, amended 1977
- The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (42 U.S.C. Chap. 103),
- The Antiquities Act of 1906, as amended (P.L. 52-209),
- The National Historic Preservation Act of 1966, as amended (P.L. 89-665),
- The Archaeological and Historic Preservation Act of 1974 (P.L. 86-253),
- The Archaeological Resources Protection Act of 1979, as amended (P.L. 96-95),
- The American Indian Religious Freedom Act of 1978, as amended (42 U.S.C. 1996), and
- The Native American Graves Protection and Repatriation Act of 1990 (P.L. 101-601).
- Executive Order 12898 of 1994 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations"

This EA considers the requirements of these laws and implementing regulations, as applicable. The Proposed Action, including associated applicant-committed mitigation measures, complies with the laws and implementing regulations indicated above.

1.3.2 Conformance with San Juan/San Miguel Resource Management Plan

In December of 1984, the San Juan/San Miguel Resource Area completed a Resource Management Plan (RMP), which was amended in 1991 (*San Juan/San Miguel Resource Management Plan Amendment / Final Environmental Impact Statement Colorado Oil & Gas Leasing and Development)*. It is stated in the RMP, "BLM actively encourages and facilitates the development by private industry of public land mineral resources so that national and local needs are satisfied and economically and environmentally sound exploration, extraction and reclamation practices are provided." [United States Department of Interior (USDI), BLM 1984]. The proposed action has been developed to comply with the conditions of the RMP and amendments, and is being reviewed for consistency and compliance with this plan.

The RMP was developed to provide a framework for long range planning (10-20 years), "...land use plans and multiple use management decisions would recognize that mineral exploration and development can occur concurrently or sequentially with other resource uses" (BLM, 1984). The RMP addresses oil and gas exploration and development: "Except for Congressional withdrawals, public lands shall remain open and available for mineral exploration and development unless withdrawal or other administrative action is clearly justified in the national interest" (BLM, 1984).

The objectives of the 1991 Oil and Gas Amendments to the RMP are identified as "Facilitate orderly, economic, and environmentally-sound exploration and development of oil and gas resources using balanced multiple-use management" (BLM, 1991). These updates require the BLM to look at the impacts of site-specific oil and gas projects. In accordance, "areas are identified where (1) stipulations may be applied to new oil and gas leases, or (2) Conditions of Approval (COA) may be attached to applications for APDs on existing leases" (BLM, 1991).

Additionally, the proposed action has been reviewed for conformance with the *Proclamation Establishing Canyons of the Ancients National Monument,* dated June 9, 2000. The CANM was created to protect cultural, geologic, and biologic resources that make the area: one of the highest (if not the highest) known density of archaeological sites in the Nation, geology that is remarkable for its landforms, and crucial habitat for several unique reptiles. The proclamation addresses oil and gas development as follows:

> "Because most of the Federal lands have already been leased for oil and gas, which includes carbon dioxide, and development is already occurring, the monument shall remain open to oil and gas leasing and development; provided the Secretary of the Interior shall manage the development, subject to valid existing rights, so as not to create any new impacts that interfere with the proper care and management of the objects protected by this proclamation; ...."

The CANM is currently in the process of developing a new Resource Management Plan (RMP). Until this RMP is implemented, interim management of the CANM is conducted per the 1984

San Juan/San Miguel Resource Management Plan (BLM, 1984); the 1991 Oil and Gas Amendment to the RMP (1991 O+G Amendment); and the following interim management guidance dated October 5, 2000, BLM State Director's Guidance memorandum and a September 13, 2000, BLM Washington Office memorandum "Interim Management Guidance for Oil and Gas Leasing and Development of the Canyons of the Ancients National Monument". A reprint of the Interim Guidance can be found at the following web site: www.co.blm.gov/canm/canmoginterim.htm.

Relating to NEPA review, the BLM Washington Office memorandum states:

> "…The analysis would recognize the short-term nature of oil and gas operations in the context of the long-term nature of the natural and cultural resources environment.
>
> If the analysis indicates no impact to the Monument resources, or indicates impacts to resources, but determines that the impacts are consistent with the Proclamation, the proposed operation can proceed in accordance with applicable regulations, standards and stipulations.
>
> If the analysis and documentation indicate that the proposal may have impacts that are not in conformance with the Proclamation, the BLM would work with the applicant to find alternatives or modifications to the proposal that would minimize such impacts through special permit conditions, consistent with the applicants right under applicable laws, regulations, and stipulations."

The Proposed Action, as well as the other alternatives, is in conformance with the BLM 1984 RMP, the 1991 O+G Amendment, and the above referenced Interim Guidance from the BLM State Director and the BLM Washington Office. Oil and gas exploration and development is considered an appropriate management activity within the CANM.

1.3.3 Conformance with Colorado Standards for Public Lands Health

In 1997, BLM established standards for health of public lands in Colorado (BLM, 1997). The standards included goals and indicators to determine the health of upland soils, riparian systems, plant and animal communities, special status species, and surface water and groundwater. The standards relate to all uses of public lands and a finding for each standard must be included in each EA. Findings for each standard are discussed in the appropriate portions of this EA dealing with environmental consequences to each resource.

The Proposed Action, including associated applicant-committed mitigation measures, conforms to the BLM Colorado Standards for Public Land Health.

1.4 Leases Affected

The Proposed Action would occur on federal oil and gas leases (C-12039, COC-019347, and COC-027366). Development of these leases would be in compliance with all lease stipulations, unless the BLM were to grant exceptions or waivers. Such exceptions and waivers could be granted based upon site-specific and temporal conditions which would allow development

without compromising the resource values being protected. In addition, BLM will attach Conditions of Approval (COA) at the APD approval stage to further protect resource values, where such conditions do not compromise the contractual right of the Proponent to develop its mineral resources.

1.5 Interrelation to Other Projects

The proposed project area is within the Paradox Basin, an area of sustained development by oil and gas producers. The area encompassed by the proposed project, as well as adjacent areas, has been affected by oil and gas development since the early 1950s. Exploration and development of existing oil and gas leases on BLM administered lands in Montezuma County continues today.

Existing or previous oil and gas development consists of over 50 active or abandoned wells within five miles of the proposed wells (COGCC, 2006). An existing 50-foot wide permanent oil and gas infrastructure right-of-way (ROW) with a 30-foot wide temporary use area (TUA) exists adjacent to both of the proposed Kinder Morgan well sites (BLM, 1983).

As proposed, the SC-11 and HF-3 wells would tie, via flowlines and short access roads, into this existing permanent ROW. After tying into the permanent ROW the pipelines would tie into the Hovenweep and Yellowjacket cluster facilities respectively.

The surface disturbance and associated impacts from construction activities within the permanent infrastructure ROW were addressed by the BLM in the 1983 Shell Oil Company proposed CO_2 Project, Wasson Field/Denver Unit (BLM, 1983).

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

Kinder Morgan has filed APDs, completed May 24, 2006, to construct and drill two CO_2 gas wells in the Leadville Formation of the McElmo Dome Field/Unit. The proposed project involves construction of two well pads to drill the wells. The two wells are the Kinder Morgan HF-3 and SC-11. The wells and associated project components are located on Federal lands managed by the BLM, CANM.

As proposed, new road construction would consist of a 289.93-foot long by 50-foot wide access road (0.33 ac) to the SC-11 well site, and a 802.64-foot by 50-foot wide access road (0.92 ac) to the HF-3 well site. The total surface disturbance from access road construction would be approximately 1.25 acres. The access roads would connect each well site to the existing permanent oil and gas infrastructure ROW. Once drilling and testing are completed, and the wells deemed productive, the wells would be connected via construction of a flowline to an existing CO_2 pipeline gathering system within an existing permanent oil and gas infrastructure ROW.

Reclamation of the well pads and flowline/access road ROWs is required by the BLM. If a well would be deemed unproductive, the well and location would be abandoned and reclaimed in accordance with applicable BLM requirements stipulated in the COA for the well. Reclamation efforts would continue until all related COA stipulations are met. The project COA, *Drilling Plan*, and *Surface Use Plan* are all part of the proposed action and are provided in Appendix A. If a well were produced, reclamation would occur after the well is no longer economically productive (in an estimated 10-20 years).

2.1.1 Project Location

The proposed Kinder Morgan CO_2 gas wells are located approximately 20-25 miles west and northwest of Cortez, Colorado and within the northern portion of the CANM (Figure 1). The proposed wells are entirely within Montezuma County, Colorado and can be found on the Woods Canyon and Negro Canyon; 7.5 minute U. S. Geological Survey (USGS) topographic quadrangle maps (Figures 2 and 3 Project Area Maps). The wells would be vertically drilled with horizontal completions at the following locations:

Kinder-Morgan SC-11
Surface Location (850-feet FNL &1793-feet FWL)
Bottom Hole Location (1543-feet FSL & 2419-feet FWL)
Township 36N, Range 18W, Section 8
Montezuma County, Colorado
6476-feet Elevation
New Mexico Principal Meridian

Kinder-Morgan HF-3
Surface Location (828-feet FNL & 84-feet FWL)
Bottom Hole Location (2224-feet FSL & 1158-feet FWL)
Township 37N, Range 18W, Section 7
Montezuma County, Colorado
6421-feet Elevation
New Mexico Principal Meridian

2.1.2 Project Construction

The following descriptions of project design features (Table 1) and construction practices are based on the surface use plans of each well site.

Table 1. Project Design Features for Kinder Morgan's Proposed 2 Well Project, BLM, CANM, Montezuma County, Colorado, 2006.

Well Name	Road/Flowline Length/Acres Disturbed (50-foot wide ROW)	Well Pad Area (Acres)	Total Affected Surface Area (Acres)
Kinder Morgan SC-11	289.93-ft/0.33-ac	3.09	3.42-ac
Kinder Morgan HF-3	802.64-ft/0.92-ac	3.09	4.01-ac
			Total Disturbance 7.43 acres

Existing Infrastructure – As described in Section 1.5, an existing 50-foot wide permanent oil and gas infrastructure ROW with a 30-foot wide TUA exists adjacent to both of the proposed Kinder Morgan well sites (BLM, 1983). Within this ROW are an improved bladed road and a CO_2 gathering pipeline system. Both of the proposed action wells, if productive, would be connected via flowlines to this existing gathering system. Access to all proposed well sites would be via the existing road network with short new construction access proposed for the two well sites.

Access Road Construction - Two (2) segments of well site access are proposed. New road construction to the SC-11 well site would be 289.93-feet long by 50-feet wide (0.33 acres) and 802.64-feet long by 50-feet wide (0.92 acres) to the HF-3 well site. Both of the access roads would originate from the existing area oil and gas infrastructure road system. The following project components would be constructed within the 50-foot wide access road ROWs: an 18-foot wide driving surface; bar ditches along both sides of the driving surface; and a flowline. These access roads would be constructed according to specifications outlined in the BLM "Gold Book" for road design and construction.

Well Pad Construction – The proposed SC-11 and the HF-3 are both located within previously chained (disturbed) piñon-juniper habitats. The pad locations would be stripped of vegetation, leveled and graded. A surface cover of gravel may be applied in order to provide a safe working

surface and to reduce the potential for wind and water erosion of site soils. Trailers for work and living space for the rig supervisor, tool pushers, mudloggers/geologists, mud engineers and safety personnel will be temporarily placed on the pad locations.

Well Drilling –The drilling operations are expected to commence soon after a permit is issued, anticipated for fall-winter 2006. Drilling operations for each well would last for approximately 3-4 weeks, and would be drilled in succession. Rig crews work on 12-hour shifts and typically number 5 people per crew. A diesel powered substructure type drilling rig, with a rated hook load capacity of 350,000 lbs or higher would be mobilized to location, including drill pipe, drill collars, electric generators, mud pits, mud pumps, blow-out preventers (BOPs), and associated equipment.

Directional drilling a well from surface to intersect the reservoir at a departure of one mile or greater from vertical is not feasible due to the technical challenges and costs associated with this process. The salt/shale section located at ~5500' to ~7000' has a high risk associated with drilling a vertical hole through the shale due to swelling and sloughing. This presents a very "sticky hole" condition that has been the cause of several fishing/sidetracking operations throughout the development of McElmo Dome. There are also high concentrations of H2S encountered throughout this interval. The interval was named the "Killer Shale" by Shell when they were developing this field. It is technically infeasible to drill a deviated wellbore through this interval at this time.

Conductor pipe would be set from surface to approximately 80-feet deep prior to the drill rig moving onto location. A 12-¼" diameter surface hole is drilled approximately 3,000', into approximately 100' of the Cutler formation. A full string of 9-⅝" diameter (steel) surface casing is set at this point and cemented to surface in order to protect groundwater, primarily within the Shinarump formation, from mixing with drilling fluid. An 8-3/4" hole is then drilled from the surface casing point to approximately 8,000' (20' within the Leadville Formation). As mentioned above, the "Killer Shale" section during this interval is extremely difficult and requires additional time. A full string of 7" Chrome casing (tubingless completion) is then set and cemented to surface. A 4-3/4" pilot hole is drilled to 200' below the top of the Leadville formation for evaluation purposes. Following the wireline logging of this section, a cement plug is spotted and drilled to a "kick off" depth dictated by the logging results. The 200 feet of the Leadville vertical drill hole will be cemented to the lower casing point.

A smaller completion rig will then kick off a horizontal drill leg turning 90 degrees in 100 feet and continue to drill a 4-3/4" curve and lateral section. The target lateral section is drilled to a length of 2500' or less. (The direction is shown on the plat along with the proposed bottom hole being 2,500 feet from the surface hole.) The final length is dependent upon the challenges encountered while drilling (staying in target, rate of penetration, and hole cleaning ability) which historically has been a 1000' to 1500' extension. The previous horizontal wells were drilled under balance (using nitrogen and water to produce the well while drilling) due to the proven inability of the formation to hold a drilling mud system. During this phase of the drilling a geologist will be monitoring rock porosity which will determine the overall length of the horizontal leg with a minimum distance of 1,000 feet. This type of completion increases well production resulting in fewer wells needed to maintain production levels.

Fresh water for drilling operations would be obtained and trucked from a private, off lease source during construction and drilling. Trucked water would be discharged onsite to the fresh water reserve pit. Approximately 8,000 barrels (bbls) of water would be needed for the first drill location. Any leftover fresh water (following drilling) would be pumped from the pit and hauled to the next drill location. It is estimated that another 2,000 bbls would be needed to supplement recycled water for the second well. In total approximately 10,000 bbls or 1.69 acre-feet of fresh water is estimated for use in the drilling process. The fresh water usage could vary depending on the severity of lost circulation during drilling.

Water generated during production testing would be discharged to a flow back tank where it would be collected by vacuum truck and hauled off-site to a permitted underground injection control (UIC) well. In addition to fresh water, salt water (brine) is needed for drilling through salt zones beginning in the Desert Creek formation (approximately 5,800-ft). The brine water is purchased and hauled to the first well site from a private well in Bedrock, Colorado (20 miles west of Naturita). Approximately 4,000 bbls of brine water would be discharged onsite into the salt-water reserve pit for the first well pit. Any unused brine water would be recycled and hauled to the subsequent drill site. It is estimated that an additional 1,500 bbls would be needed for the second drill site to supplement the recycled brine. In total, approximately 5,500 bbls or 0.93 acre feet of brine water is estimated for use during the drilling of both wells.

The water remaining at the end of the drilling program would be disposed of in the nearest Kinder Morgan disposal well (Yellowjacket and Hovenweep). It is estimated that approximately 1,000 bbls of fresh water and 2,000 bbls of brine would necessitate disposal upon completion of the drilling operations.

Drilling fluids and mud additives are re-circulated into the wells during drilling. Drill cuttings are extracted from the drilling muds and placed in the reserve pit. The drilling fluids would be recycled whenever practical. Produced water or spent fluids would be allowed to evaporate in the reserve pit, or would be hauled to a Class I non-hazardous disposal well.

Mud Products on site during the drilling process are listed in Table 2.

Table 2. Mud Products and Quantity on each Location, 2 Proposed Kinder Morgan Wells.

Mud Products	Quantity on Location
Bentonite	400 sacks
Barite	800 sacks
Soda Ash	40 sacks
Lime	120 sacks
Polymer	300 gallons
Lignite	40 sacks
Drispac/polymer	200 sacks
LCM	400 sacks

Source: Mike Atchison, Baroid Drilling Fluids, 2002.

Well Completion, Testing, and Operation – Production casing would be run and the well would be completed for production following drilling. Near surface aquifers would be cased off with a 9-⅝" diameter surface casing string set at 2,800 to 3,200 feet below ground surface and cemented to surface. All areas of the well pad not needed for production would be reclaimed once production commences. Wireline logging at the end of drilling operations would be conducted in one day by one double–axle logging truck. The completion rig would be on location for approximately 4 weeks.

On-site Personnel - During the construction, drilling, completion and operation of each well, the following personnel would be onsite for varying durations: Rig supervisor, tool pusher, mud logger's (2), mud engineer (1), H2S safety technicians (2), in addition to the regular rig crew (5 people) which work 12-hour shifts. Other personnel such as welders and mechanics may be at the site as needed. Other miscellaneous drilling and production staff, specialists and consultants may be needed. Due to safety concerns all unnecessary personnel and vendors are kept off these closed and gated locations. On-site personnel each have a vehicle on location.

Transportation – Typically 25 tractor-trailer loads are required to move the bulk of the drilling equipment onto the surface location and the same numbers of loads are required to relocate the drilling equipment from the location. Approximately 125 trips (total) per well site are needed to supply water for drilling, 2 trips for fuel, and 4 trips for cement. An additional 10 vehicle trips per day would be needed for transportation of crews to the site. Approximately 70 trips per well site would be needed to relocate (first well) and dispose (second well) of fresh water and brine water after completion of drilling. Solid waste and liquid waste would be disposed of once per week for a total of 8 trips. This is a total of 565 vehicle trips per well.

Safety and Hazards – Safety and security are of primary concern to Kinder Morgan due to possible releases of hydrogen-sulfide gas (H2S) during drilling and completion operations within the McElmo Dome Field.

In order to assure that only personnel certified in H2S safety protocols and the use of specialized H2S safety and emergency equipment, are permitted onsite, all well pad locations would be fenced and gated during drilling and completion operations. All personnel are required to check in and out with the H2S safety supervisor upon arrival or departure from the site. All personnel wear H2S monitors on the outside of clothing when working in the project area. Finally, the drill rig is equipped with several H2S monitors with audible and visual alarm systems to alert personnel when H2S is present.

Kinder Morgan's H2S Safety Plan is provided in the APD. Other standard industry safety policies are also in effect during all operations at the well sites in an effort to eliminate all accidents.

Flowline Construction - Should the wells prove productive, the flowlines would be constructed. As described previously, the flowlines and access roads would occupy the same ROW alignments. Typical construction consists of clearing the ROW, trenching the ditch to 5-6 feet, stringing and welding the pipe, and reclamation of the ROW.

Operation and Maintenance - Should the wells be productive, Kinder Morgan would own or have control of the following facilities on each location: a wellhead and a short piece of above ground piping to connect the well to a new underground flowline. The new flowlines would transport the produced CO_2 to an existing cluster facility. At the cluster facilities separators would be used to remove production liquids from the gas stream. Produced water would be transported by an existing pipeline for eventual injection into the same Leadville/Ouray formation through existing EPA Class I disposal wells. Anticipated volumes of production water over the life of the well are difficult to predict due to variability in geologic conditions and well construction. Typically, annual volumes of production water decrease incrementally over the life of the well. Preliminary estimates of production water volumes based on typical CO_2 wells indicate production of 1.0-acre feet/year for the life of the well. However, this produced water is injected back into the Leadville/Ouray formation through the EPA Class I disposal wells.

Plans for Surface Reclamation - After completion of the proposed project, each location would be reclaimed according to BLM specifications provided in each approved APD, and as proposed by Kinder Morgan in their Surface Use Program. Reclamation activities would include removal of facilities and waste, reserve pit closure, re-contouring abandoned sites, reseeding and monitoring of re-vegetation efforts and noxious weed management. All well pad locations would be reclaimed to approximately one acre, which would remain for the life of the well. Kinder Morgan would contact the BLM within 48-hours of initiating reclamation activities and upon completion of restoration measures.

The total area to be disturbed by construction of the two well pads is approximately 7.43 acres.

2.2 No Action Alternative

The National Environmental Policy Act (NEPA) requires that a "no action" alternative be considered in all environmental documents. For the proposed Project, the no action alternative would preclude the oil and gas development described in the Proposed Action. The No Action alternative would not, however, preclude the future consideration or proposal of additional development.

Denial of the APD would be based on an analysis of the impacts that would indicate an unacceptable level of impact at any position within the lease boundary. Under terms of federal oil and gas leases, BLM cannot deny the right to drill and develop the leasehold, but the BLM can require relocation of the well by up to 200 meters (656 feet). Based on the applicants subsurface target locations and the topography of the landscape at the well location, the on-site inspection resulted in determinations that the surveyed sites were acceptable locations for the proposed wells.

Federal, state, and fee oil and gas leases grant the right and privilege to drill for, mine, extract, remove, and dispose of all the oil and gas deposits in the leased lands, subject to the terms and conditions incorporated in the lease. The denial of the right to drill could void the lessee's contractual rights. The No Action Alternative would mean the 7.3 acres of long-term disturbance would not occur. The economic consequences would be to forgo the possible energy reserves that might be obtained from these wells, the corresponding reduction in energy supplies

for the region and the nation, and the loss of royalty and tax revenues to local, state, and federal governments.

2.3 Alternatives Considered But Not Carried Forward

Based on the existing RMP, the 1991 Oil and Gas Amendment, and Interim Criteria under which the APDs are being reviewed for approval, proposed well locations may be relocated by the BLM (43CFR 3101.1-2) up to 200 meters (656-feet) from the proposed site. However, following onsite surveys it was determined by the BLM that the location of the Preferred Alternative well sites represents the least environmental impact relative to the placement of the well sites at alternative locations. The rationale for this determination is provided above in Section 1.7.1. As such, this alternative is not further considered throughout this document.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

In this chapter, to comply with the CEQ requirements of analytic and concise environmental documents (40 CFR 1502.2), those resources identified as potentially affected by the proposed action or as a special concern are described. All critical elements (e.g., cultural resources, threatened/endangered species, etc.) are addressed in accordance with H-1790-1 - National Environmental Policy Act Handbook. Non-critical environmental components (e.g., topography, climate, etc.) are not discussed in detail. For the purpose of providing baseline data, the project study areas are defined as approximately ten acres including, and surrounding each well site. Onsite field investigations of the well sites were conducted in May 2006 by Ecosphere biologists.

Environmental resources may be affected in many ways during implementation of the proposed action. The effect, or impact, is defined as any change or alteration in the pre-existing condition of the environment produced by the proposed action, either directly or indirectly. Impacts can be beneficial to the resource (positive) or adverse (negative), and can be either long-term (permanent) or short-term (incidental, temporary). Short-term impacts affect the environment for only a limited time, and the environment generally reverts to the pre-project condition. Short-term impacts are often disruptive and obvious. Long-term impacts are substantial and permanent alterations to the pre-project environment.

With long-term impacts, the environment would potentially not revert to pre-existing condition during the lifetime of the proposed project and beyond. Long-term impacts are defined as those impacts whose results endure more than five years. For the purpose of this EA, potential impacts have been divided into three categories:

> High – as defined in CEQ guidelines (40 CFR 1500-1508) are impacts that are substantial in severity and therefore should receive the greatest attention in decision-making;
>
> Moderate – impacts which cause a degree of change that is easy to detect, and do not meet the criteria for significant impacts; and
>
> Low – impacts which cannot be easily detected, and cause little change in the existing environment

Implementation of the Proposed Action could potentially affect certain critical elements of the human environment, as defined in the BLM Handbook H-1790-1 (NEPA Handbook), Appendix 5, as amended. These elements must, at a minimum, be considered in all EAs developed by the BLM and either analyzed or a no-effect declaration made. The status of the critical elements for the Proposed Action is indicated in Table 3.

Table 3. Critical and Non-Critical Elements of the Human Environment in the Project Areas

Critical Elements	Potentially Affected		Non-Critical Elements	Potentially Affected	
	Yes	No		Yes	No
Air Quality	X		Cadastral Survey		X
Areas of Critical Environmental Concern (ACEC)	X		Forest Management		X
Cultural Resources	X		Fire	X	
Environmental Justice		X	Geology/Topography/Minerals	X	
Farm Lands (Prime or Unique)		X	Health and Safety	X	
Floodplains		X	Hydrology/Water Rights		X
Invasive, Non-Native Species	X		Lands and Rights-of-Way		X
Migratory Birds	X		Law Enforcement		X
Native American Religious Concerns	X		Noise	X	
Threatened or Endangered Species	X		Paleontology		X
Wastes, Hazardous or Solid	X		Rangeland Management	X	
Water Quality Drinking/Groundwater	X		Recreation	X	
Wetlands/Riparian Zones		X	Socioeconomic Values	X	
Wild and Scenic Rivers		X	Soils	X	
Wilderness		X	Sensitive Species	X	
Colorado Standards for Public Lands Health	X		Vegetation	X	
			Visual Resources	X	
			Wildlife, Aquatic and Terrestrial	X	

Critical Elements Listing Source: BLM, 2003. Potential affects determination made by resource specialist staff, Dolores Public Lands Office, Bureau of Land Management.

Primary uses of the project area are recreation, grazing, Christmas tree procurement, firewood gathering and some existing natural resource development activity consisting primarily of natural gas (including CO_2) production, gathering, and transport. There are no prime or unique farmlands, known paleontological resources, wilderness or wilderness study areas, floodplains, or wild and scenic rivers within the study areas. Due to the absence of people living in the study area, there are no potential issues associated with environmental justice.

3.1 CRITICAL ELEMENTS

3.1.1 Air Quality

According to the Colorado Air Quality Control Commission Report to the Public, 2004-2005, (CDPHE, 2005) the project study areas lie within the Western Slope Colorado Air Quality Control Region. Historically, the primary sources of air pollutants in this region included particulate matter from unpaved roads, seasonal sanding for winter travel, motor vehicles, and wood burning stove emissions. These sources have been addressed in many of the Western Slope communities. Currently, air quality concerns in the Western Slope Region are from impacts of a recent surge in energy development, including direct emissions, support service impacts and associated growth. In addition, controlled and uncontrolled burns are a substantial source of air pollution in this region. (CDPHE, 2005). Both local and distant air pollutant

sources affect air quality in Montezuma County. Large power plants in San Juan County in New Mexico and Coconino County in Arizona are the largest nearby point sources of sulfur dioxide and nitrogen oxides. (Binkley 1997).

Air quality permits are required for emission sources on the well pads if established emission thresholds for designated pollutants are exceeded. State and Federal Air Quality Standards are presented in Table 4. No air quality permits are required for the proposed action.

Environmental Consequences

The Colorado Department of Public Health and Environment (CDPHE), Air Quality Division regulates air quality impacts from oil and gas activities and develops mitigation measures on a case-by-case basis. Impacts are evaluated to see if they are allowable or unacceptable. Air emissions associated with natural gas production include hydrocarbons, carbon monoxide (CO) and nitrogen oxides (NOx) associated with production equipment; gas fired drilling equipment, and vehicle exhaust. Air quality impacts associated with the construction, drilling and operation of the proposed action would occur from several sources:

- Suspended particulates (dust) during construction and from vehicular traffic on unpaved roads;
- Suspended particulates (dust) from wind erosion on cleared construction areas;
- Hydrocarbon emissions from the drill rig, service/support vehicles and operation of gasoline and diesel engines (i.e. generators).

Gas production from the well sites may also result in localized reductions in air quality due emissions from the well sites. Wind dispersion and dilution would reduce the magnitude of emissions and these impacts would be low at locations beyond the well site boundaries. Air quality impacts from construction and drilling operations, primarily from vehicle/equipment exhaust and increased fugitive dust, would be low to moderate and short-term. A tested H2S Contingency Plan that is designed to alert and protect the public from accidental releases during the drilling process mitigates potential impacts from releases of H2S gas. During production, impacts would be low and long-term.

Under the Proposed Action, the impacts on air quality would be low to moderate and short-term during construction and drilling. The potential for releases of H2S gas is high (refer to Health and Safety); however, is highly unlikely due to the necessary implementation of a H2S Safety Plan. Impacts during production operations would be low and long term. These potential impacts would be mitigated by measures described below and following adherence to Surface Use COA should the APDs be approved.

The No Action Alternative would deny Kinder Morgan's development of the proposed action. Under this alternative, there would be no impacts to project area air quality.

Mitigation Measures

The proposed project area disturbance would be re-seeded with a BLM approved seed mix to stabilize soils and reduce the impacts of fugitive dust created from wind erosion. Suspended dust from construction could be reduced through sprinkling of disturbed areas with fresh water from a clean water source during construction. The potential gravelling of the well pads would also serve to reduce the generation of air-borne particulates. These actions would not only reduce the amount of dust in the air, but would maintain good construction site visibility thereby minimizing potential health and safety hazards. Air permits would be required where emission thresholds are exceeded based on CDPHE requirements.

Table 4. State and Federal Air Quality Standards

	Ambient Federal Standards			Colorado Standards
Parameter	**Averaging Time**	**Primary**	**Secondary**	**Primary**
Carbon Monoxide	8 hours	10 mg/m^3	NA	10 mg/m^3
	1 hour	40 mg/m^3	NA	40 mg/m^3
Lead	Per Quarter	1.5 ug/m^3	1.5 ug/m^3	NA
	1 month	NA	NA	1.5 ug/m^3
Nitrogen Dioxide	Annual	100 ug/m^3	100 ug/m^3	100 ug/m^3
Oxidants (ozone)	1 hour	235 ug/m^3	235 ug/m^3	235 ug/m^3
Sulfur Dioxide	Annual	80 ug/m^3	NA	2-15 ug/m^3
	24 hours	365 ug/m^3	NA	5-100 ug/m^3
Particulates (PM10)	Annual	50 ug/m^3	50 ug/m^3	50 ug/m^3
	24 hours	150 ug/m^3	150 ug/m^3	150 ug/m^3
Particulates (PM2.5)	Annual	15 ug/m^3	15 ug/m^3	NA
	24 hours	65 ug/m^3	65 ug/m^3	NA

Sources: National Ambient Air Quality Standards (EPA, 2006). Ambient Air Quality Standards for the State of Colorado (CDPHE, 2006).

Key:
mg/m^3 = milligrams per cubic meter
ug/m^3 = micrograms per cubic meter
NA = not applicable. There are no Federal or State of Colorado standards.

3.1.2 Areas of Critical Environmental Concern

Areas of Critical Environmental Concern (ACEC) are those specific areas of BLM administered lands, which are managed to protect or enhance particular, special, or unique values (ACEC Plan, 1986). The proposed project area is within the CANM, and formerly within the Anasazi Cultural Multiple Use Area. The management objectives of the Anasazi Cultural Multiple Use Area are superseded by the Monument designation. A description of the resources and management objectives of the CANM are presented in Section 1.3 Conformance with San Juan/San Miguel Resource Management Plan of this EA.

Environmental Consequences

The proposed action is consistent with the management direction of the Anasazi ACEC as outlined in the 1984, RMP, and consistent with the CANM Interim Management Guidelines and the ACEC Management Plan.

Under Alternative No. 1 (Proposed Action), there would be no land use conflicts on the Anasazi ACEC or CANM during construction, drilling or production operation of the proposed action.

The No Action Alternative would deny Kinder Morgan's development of the proposed action. Under this alternative, land use within the Anasazi ACEC and CANM would remain unchanged.

Mitigation Measures

Measures to mitigate potential impacts to CANM resources are described for each resource potentially affected throughout this EA.

3.1.3 Cultural Resources and Native American Religious Concerns

Native Americans are consulted through a request for input on the EA. If Native American religious or other concerns are identified, they will be brought forward for analysis. A list of the Native American tribes and pueblos being consulted is provided in the consultation coordination and Public Participation section of the EA.

Existing inventory data indicate that the vicinity of the project area has been utilized and inhabited by human groups from as early as 5,500 B.C. to present. No cultural resources are located within the areas of proposed well pads, access roads, or flowlines. The proposed HF-3 well pad and associated facilities are located within the Mockingbird Mesa Cultural Resource Emphasis Area (CREA). The Anasazi Cultural Multiple Use Area (ACMUA) mesa was identified as an important cultural resource area in the San Juan/San Miguel Resource Management Plan, and in the plan was designated an Area of Critical Environmental Concern (ACEC). This area is also cited in the Monument Proclamation. A Cultural Resource Management Plan for Mockingbird Mesa was prepared and implemented in 1986.

The proposed SC-11 well pad and associated facilities are located in the Anasazi Cultural Multiple Use ACEC.

Archaeologists from Complete Archaeological Service Associates (CASA) (BLM permit BLM-C-39285) conducted an intensive Class III archaeological survey of the proposed well sites and associated access road and flowline alignments. For each site, a 660-ft by 660-ft (10 acres) area was inventoried by walking a series of parallel transects spaced no greater than 15 meters apart. Prior to field surveys, a records search was undertaken at the CANM and State of Colorado Office of Archaeology and Historic Preservation office in order to identify previously recorded sites in proximity to the project study areas. The full cultural resources report has been submitted to CANM and the State of Colorado Office of Archaeology and Historic Preservation. No cultural resources are located within the area of the proposed well pads, access roads or flowline alignments.

The HF-3 was surveyed on January 12, February 12 and February 20, 2006. (CASA 06-41). Five previously recorded Anasazi sites were located within the survey area. All sites are considered important and eligible for nomination to the National Register of Historic Places. The sites are not located within the proposed well pad or construction zone and would not be affected by construction.

The SC-11 was surveyed on February 22, 2006 (CASA 02-130, 2002) (CASA 02-131, 2002). No historic properties were located in area of the proposed well pads and associated facilities during the inventory conducted by CASA. Due to thin soils and exposed bedrock on the project site, the potential for undetected subsurface historic sites is limited.

Environmental Consequences

Under Alternative No. 1 (Proposed Action), and following the implementation of the required mitigation measures described below, there will be no impact to cultural resources from developing the proposed action.

The No Action Alternative would result in no impacts to cultural resources.

Mitigation Measures

The following mitigation measures are included in the Conditions of Approval (See Appendix A) to protect cultural values:

- If subsurface cultural resources are unearthed during construction, activity in the vicinity of the cultural resource would cease, the area would be protected, and a BLM representative notified immediately. Procedures for notification and treatment of discovered cultural resources are discussed in detail in the BLM Surface Use Conditions of Approval.

- The operator would inform all employees and subcontractors of the procedures to follow if cultural resources are uncovered during operations. In addition, the operator would inform employees and subcontractors that any disturbance to, defacement of, or collection or removal of cultural materials, is not permitted and is a violation of law.

3.1.4 Invasive, Non-native Species

No species considered invasive were documented in the field investigations conducted in April or May 2006. Invasive weeds can cause detrimental change to the composition of plant communities and wildlife habitat. Invasive weeds can aggressively populate in areas of new ground disturbance and crowd out native species.

Environmental Consequences

Loss of vegetation in the proposed project area would occur due to blading and trenching. A total of approximately 7.43 acres of vegetation would be removed as a result of the development

of the proposed action. The removal of vegetation could increase the potential for invasive and noxious weed infestations in the project area.

This impact would be moderate and short-term, and would result in a noticeable change in the composition of the project area vegetation. As unused areas of the well pad are reclaimed, impacts would shift to low and long-term.

Under Alternative No. 1 (Proposed Action) there would be low to moderate, short-term potential impact during construction, and drilling operations associated with increasing the potential for invasive species to establish in the project area and the conversion of vegetative communities. Following successful reclamation and adherence to mitigation measures and Surface Use COA, potential impacts would be low and long-term during operation of the wells.

The No Action Alternative would deny Kinder Morgan's development of the proposed action. Under this alternative, there would be no change to project area vegetation, and no increase in the likelihood of invasive species spreading.

Mitigation Measures

Reclamation, including re-seeding and noxious weed management, of the project area is discussed in detail in the BLM Surface Use Conditions of Approval, see Appendix A. Stripped topsoil and vegetation will be stockpiled for subsequent reclamation of unused areas of the well pad. Kinder Morgan will initiate re-vegetation activities at the direction of the BLM following construction for areas no longer required for production operations. Kinder Morgan will monitor for noxious weeds and implement appropriate treatment and controls if necessary.

3.1.5. Migratory Birds

Vegetation removal will result in a loss of habitat for a variety of avian species protected under the Migratory Bird Treaty Act (MBTA). Also, the following Birds of Conservation Concern have potential to occur in the project area: golden eagle, gray vireo, sage sparrow, pinyon jay, black throated gray warbler and Virginia's warbler.

Environmental Consequences

Construction of the proposed project could result in a loss of potential tree, shrub and ground nesting habitat, as well as foraging habitat. Direct impacts to these species are expected to be greater if construction occurs during the breeding season from April to August when nest destruction is possible. Additionally, noise and human disturbance could cause some nest abandonment in adjacent areas. These potential impacts however are expected to be low, as each location would be drilled in the fall months when migratory bird breeding activities are complete and the birds have migrated out of the area.

Mitigation Measures

Drilling activities would avoid the migratory bird breeding season, generally described as between April and August. If construction is scheduled to occur between these months, nest searches prior to any ground disturbance may be required.

3.1.6 Threatened and Endangered Species

In following the guidelines of the Endangered Species Act (ESA) of 1973, as amended, a search was made for threatened or endangered, flora and fauna species with potential to occur in Montezuma County and/or in the project area. Provided in Table 5 is a listing of all federally listed threatened, endangered and candidate species. With the exception of the candidate species, all of these species are protected under the ESA.

The project was surveyed for potential habitat of the listed species on April 27, 2006 by a BLM biologist and BLM botanist and on May 6, 2006 by a biologist from Ecosphere Environmental Services. The potential for federally listed species to occur in the project area is presented in Table 5. None of the federally listed threatened, endangered, or candidate species have potential to occur in the project area.

Environmental Consequences

There are no federally listed threatened, endangered or candidate species known to occur in the project areas for the proposed action. Following the adherence to mitigation measures required below, the proposed action would have "No Effect" on federally listed or proposed species. The BLM Fish and Wildlife Clearance Report is provided in Appendix B to this EA.

Under Alternative No. 1 (Proposed Action), impacts to listed species would be low and short-term during construction and drilling operations, and low and long-term as a result of development and operation of the wells. These potential impacts would be mitigated by the implementation of mitigation measures described below and following adherence to Surface Use COA should the APDs be approved.

The No Action Alternative would deny Kinder Morgan's proposed action. Under this alternative, there would be no impacts to listed species.

Mitigation Measures

Construction activities for both well sites will be confined to the proposed well pad, access road and flowline ROWs to avoid potential impacts to listed species possibly occurring outside the area surveyed during the biological survey. Should any listed species be identified during construction or operation of the proposed projects, BLM resource specialists should be contacted immediately.

Table 5. Threatened and Endangered Species With Potential To Occur in Montezuma County, Colorado and/or the Project Area. USFWS, 2006.

Species Common Name	Scientific Name	Federal Status	Habitat	Potential to Occur in Project Area (PA)
MAMMALS				
Black-footed ferret	*Mustela nigripes*	Endangered	Prairie dog colonies larger than 80 ha.	No prairie dogs colonies/towns occur in the PA or vicinity.
Canada lynx	*Felis lynx canadensis*	Threatened	Mixed conifer types.	No mixed conifer forest types in project vicinity or in CANM.
BIRDS				
Bald eagle	*Haliaeetus leucocephalus*	Threatened	Nests and roosts along perennial water sources.	No perennial water sources in PA, may occur foraging.
Southwestern willow flycatcher	*Empidonax traillii extimus*	Endangered	Breeds in riparian habitats with dense thickets.	No riparian habitats or dense willow thickets in PA.
Mexican spotted owl	*Strix occidentalis lucida*	Threatened	Nests in steep-walled canyons and trees in mixed conifer forests.	No mixed conifer forests in PA.
Yellow-billed cuckoo.	*Coccyzus americanus occidentalis*	Candidate	Breeds in riparian woodlands and similar habitats.	No riparian woodlands in PA.
FISH				
Colorado pikeminnow	*Ptychocheilus lucius*	Endangered	Eddies & backwater currents in Yampa, Green, Gunnison, & San Juan Rivers.	No perennial water sources exist within the PA.
Razorback sucker	*Xyrauchen texanus*	Endangered	Occurs in streams to large rivers with backwaters.	No perennial water sources exist within the PA.
Bonytail	*Gila elegans*	Endangered	Tributaries of the Colorado and San Juan Rivers.	No perennial water sources exist within the PA.
Humpback chub	*Gila cypha*	Endangered	Tributaries of the Colorado and San Juan Rivers.	No perennial water sources exist within PA.
PLANTS				
Mesa Verde cactus	*Sclerocactus mesae-verdae*	Threatened	Salt Desert Scrub communities in the Fruitland and Mancos Shale formations.	PA geology is not Fruitland or Mancos Shale Formations.
Mancos milkvetch	*Astragalus humillimus*	Endangered	Ledges and mesa tops in slickrock communities of the Mesa Verde Formation.	No Mesa Verde Formation in PA.
Sleeping Ute milkvetch	*Astragalus tortipes*	Candidate	Mixed desert scrub community in gravels derived from volcanic intrusion into Mancos Shale at 5400-5700 ft	Elevation of PA above 5400-5700 ft. No mixed desert scrub in PA.
Knowlton's cactus	*Pediocactus knowltonii*	Endangered	Alluvial deposits forming rolling gravelly hills in pinyon - juniper and sagebrush types, 6400 feet.	PA above 6,000 feet.
Pagosa gilia	*Ipomopsis polyantha var. polyantha*	Candidate	Mancos shale; barren shrublands; around 7,000'.	PA is not in Mancos shale badlands.

3.1.7 Hazardous or Solid Wastes

Kinder Morgan maintains a file, per 29 CFR 1910.1200(g), containing current Material Safety Data Sheets (MSDS) for all chemicals, compounds, and/or substances which are utilized during the course of construction, drilling, completion and production operations for this project.

Hazardous materials that may be found at the site may include drilling mud and cementing products that are primarily inhalation hazards, fuels (flammable and/or combustible), materials that may be necessary for well completion, stimulation activities such as flammable or combustible substances, fly ash, and acids/gels (corrosives). Human solid and liquid wastes would be generated primarily during the construction and drilling phases of the project and would be contained within portable facilities at the site.

Environmental Consequences

All hazardous substances and commercial preparations would be handled in an appropriate manner to minimize the potential for leaks or spills to the environment. Any spills or releases would be cleaned up and disposed in accordance with State and Federal regulations.

Human solid and liquid wastes would be generated primarily during the construction and drilling phases of the project and would be contained within portable facilities at the site.

Under Alternative No. 1 (Proposed Action), the potential of the proposed action to increase releases of hazardous or solid wastes is low to moderate and short-term during construction and drilling and low and long-term during production operations. These potential impacts would be mitigated by the implementation of mitigation measures described below and following adherence to Surface Use COA should the APDs be approved.

The No Action Alternative would deny Kinder Morgan's development of the proposed action. Under this alternative, there would be no exposure to hazardous or solid wastes.

Mitigation Measures

Signs will be posted on proposed project facilities that identify potential hazards associated with its operation including chemical hazards. Material Safety Data Sheets for any treatment chemicals would be maintained on site during the construction phase. Equipment operators will be required to wear appropriate personal protective equipment to minimize exposure to these hazards.

A 1-foot earth berm will be constructed around the perimeter of the well locations during the drilling and workover phase of the operations to contain any accidental spill of motor fuels or other potentially hazardous substances. The well pads will be designed in such a manner as to prevent runoff from leaving the pad. The need for the berm will be reassessed upon the completion of the well.

3.1.8 Surface Water and Groundwater

No perennial water sources are present in or within 3 miles of either proposed location. Surface drainage within the project area generally discharges to ephemeral tributaries that discharge to McElmo Creek and eventually the San Juan River located approximately 24 miles southwest of the project area near Aneth, Utah. McElmo Creek, a perennial waterway, is located about 10 miles from SC-11 and 4 miles from HF-3. Yellow Jacket Creek is located approximately 3 miles from SC-11 and 4 miles from HF-3. Typically, the San Juan River experiences peak flows, primarily from snowmelt, between April and June (BLM 1985). Principal water uses within the San Juan River Basin include irrigation, municipal, industrial, domestic, recreational, and transmountain and transbasin diversion uses.

Available surface water hydrograph data for McElmo Creek includes several US Geological Survey (USGS) gage stations including one station downstream of Cortez (USGS, 09371700), and one station near the Colorado/Utah State line (USGS, 09372000). No USGS data is available for Yellow Jacket Creek. Mean monthly streamflow data for McElmo Creek near the State line indicates flows that range from 33.9 cubic feet per second (cfs) to 65.8 cfs based on approximately 50 years of recorded data. Downstream of Cortez, flows in McElmo Creek range from 26.6 to 79.3 cfs. Mean minimum flows for both gage locations, based on the period of record, were recorded in the month of January. Mean peak flows were recorded in March downstream of Cortez and in August near the State line.

At each of the proposed well pad locations no perennial water features or riparian habitats were observed immediately adjacent to the well pads. Various unnamed ephemeral drainages are located throughout the project area. The hydrological regime in the vicinity of the project area is such that surface water flows only on an intermittent basis in conjunction with sizable precipitation events. Ephemeral waterways are fed by snowmelt; however thunderstorms are the primary source of intermittent flow in these ephemeral drainages. Key factors that influence the surface water quality in the project area include sparse vegetative cover, highly erosive and saline soils, rapid runoff, and livestock grazing. Surface runoff from each of the well pad locations discharges to local ephemeral tributaries that eventually discharge to McElmo Canyon.

Total suspended solids, total dissolved solids (salinity), heavy metal and biogenic pathogens are the water quality parameters of concern (BLM, 1985) within the project area. Water quality is managed to comply with State and Federal regulations including the Clean Water Act (1977), State Water Quality Standards, and the Colorado River Basin Salinity Control Act (1974). Available USGS water quality data for McElmo Creek at the State line indicates suspended sediment discharges ranging from less than 1 ton/day to 1,440 tons/day for the period of record (1977-1991); total dissolved solids concentrations range from 89.9 tons/day to 1,450 tons/day for the period of record (1969-1999). While these figures represent loadings from within the entire McElmo Creek watershed, they demonstrate the magnitude of pollutant loadings from mostly non-point sources and the potential for surface water influences from saline soils and erosion.

<u>Groundwater</u>

The groundwater aquifer in the project area consists of the Colorado Plateaus Aquifers that underlies an area of approximately 110,000 square miles in western Colorado, northwestern New

Mexico northeast Arizona, and eastern Utah. Aquifers within the Colorado Plateaus are generally composed of permeable sedimentary rocks that vary in thickness, lithology, and hydraulic characteristics. Within the project area, the Mesa Verde and Dakota-Glen Canyon aquifers are the uppermost water-yielding units in the Colorado Plateaus aquifers. Water from the Mesa Verde aquifer is derived from the Menafee and Cliffhouse sandstone formations; water in the Dakota-Glen Canyon aquifer is derived from the Dakota and Morrison formations (Robson and Banta, 1995).

More localized and shallow groundwater resources are encountered within alluvial deposits associated with the surface water drainages within the project area. These aquifers consist of Quaternary deposits of alluvial gravel, sand, silt, and clay or Quaternary deposits of eolian sand and silt (Robson and Banta, 1995). These aquifers tend to be localized near surface water and of limited aerial extent. In general, groundwater movement is from areas of recharge to areas of discharge (i.e. springs, seeps). Higher elevation mountains and low lying areas provide the most important recharge areas based on the presence of outcrops of permeable geologic formations.

No groundwater wells were identified within the project area based on a search of the USGS database of available groundwater data. Specific information on groundwater use is limited within the project area and no residential properties or windmill wells for stock watering were observed in proximity to the proposed well pad locations.

Water quality data for groundwater in the project area is also lacking although aquifers associated with sedimentary rocks and marine deposits are known to contain high salinity (BLM, 1985) and abundant mineralization. Water quality in the deeper sedimentary aquifers may be influenced by upward movement of saline water through improperly plugged exploration holes (Robson and Banta, 1995).

Environmental Consequences

Potential impacts to surface water may occur as a result of developing the proposed action. Disturbed project area soils would be subject to erosion by wind and/or water into nearby ephemeral washes. Spills or releases of hazardous substances, production fluids, fuels, or other constituents could be washed into surface drainages during storm events. Depletion of surface water could result from drilling and cross-connection of water bearing zones that may be tributary to surface water. The actual effects on surface water quality depend on the proximity of roads, pads, and support facilities to surface water, the magnitude, duration, and intensity of precipitation events, well completion techniques, and best management practices used for stormwater pollution control. Absence of actively flowing surface waters near the proposed well pads reduces the potential for surface water quality impacts.

During construction of the proposed action, potential effects on water quality would be moderate and short-term based on greater exposure of disturbed project area soils and use of various drilling chemicals, additives and fuels for the drilling rigs.

During operation of the wells, potential impacts to surface water quality would be low and long-term based on reclamation and stabilization of unused areas, and a decrease in use of potentially hazardous substances, chemicals, and fuels once the well is in operation. Impacts associated

with depletion of surface water are expected to be low and long-term during drilling and operation of the wells based on the proposed drilling and well completion specifications.

Under Alternative No. 1 (Proposed Action), potential impacts to surface water quality would be low to moderate and short-term during construction and drilling, and low and long-term during production. The potential impact of the proposed action on surface water depletions would be low and long term. These potential impacts would be mitigated by the implementation of mitigation measures described below and following adherence to Surface Use COA should the APDs be approved.

The No Action Alternative would deny Kinder Morgan's development of the proposed action. Under this alternative, there would be no impacts to project area surface water resources. Potential groundwater impacts associated with CO_2 resource development include:

- Potential cross-connection and dewatering of aquifers across geologic strata;
- Migration of gas into shallow aquifers; and
- Contamination of shallow drinking water aquifers due to surface spills and releases.

Groundwater contamination, dewatering, or gas migration could potentially occur as the result of improperly sealed surface casings during drilling, well bore stimulation activities, production, and abandonment activities. The potential for cross contamination of groundwater aquifers, dewatering, and gas migration is unlikely due to the requirement of wells penetrating fresh water zones to be cased and cemented. Releases of naturally occurring gases to groundwater include methane, hydrogen sulfide, or carbon dioxide. Although migration of gas by diffusion or through natural fractures is possible, manmade conduits account for most of the upward migration of gas to the near surface environment (USGS, 1994). Potential impacts are expected to be low and long-term during drilling and operation.

Shallow groundwater quality could be impacted by leakage of fluids from transfer and transportation of drilling fluids, additives, and fuels. The impact of such spills would likely be minor due to the relatively low volumes of spilled materials and localized extent of such spills. Potential impacts to groundwater resources during drilling are expected to be low to moderate and short-term based on greater amounts of potential contaminants on location. During production impacts are expected to be low and long-term.

Under Alternative No. 1 (Proposed Action), potential impacts to groundwater quality and aquifer dewatering would be low to moderate and short-term during construction and low to moderate and long term during production operations. These potential impacts would be mitigated by the implementation of mitigation measures described below and following adherence to Surface Use COA should the APDs be approved.

The No Action Alternative would deny Kinder Morgan's development of the proposed action. Under this alternative, there would be no impacts to project area groundwater.

Mitigation Measures

Unused areas of the proposed project area disturbance will be reseeded with a BLM approved seed mix to stabilize soils and prevent erosion. Should re-vegetation attempts fail, reseeding would be repeated at the request of the BLM. All disturbed areas will be re-contoured to natural topography.

Best management practices (BMP's) for sediment and erosion control and inspection and monitoring will be conducted to assure functionality of these erosion control and reclamation measures. The SC-11 and HF-3 well sites have both been included in the *Stormwater Management Plan for Construction Activities in the McElmo Dome Field*, Ecosphere 2002. The general BMP's in *Stormwater Management Plan for Construction Activities in the McElmo Dome Field*, were taken from guidance documents by the Colorado Department of Public Health and Environment (CDPHE) and the US Environmental Protection Agency (USEPA) and other engineering practice sources. Some examples of the general BMP's include:

- Disturbance associated with installation of the facility, level and gently sloping terrain outside the project area will not be graded, except where reasonable for construction equipment stability and fire safety.
- Silt fences and/or straw bale or straw wattle structures will be used at the edge of construction stormwater runoff areas where surface drainage features leave the project surface disturbance area. Locations are marked in the field with blue pin flags.
- All cuts made in steep rolling terrain during construction will be re-graded and contoured to blend into the adjoining landscape and to reestablish the natural drainage patterns.
- During construction near perennial streams, lakes or wetlands, sedimentation (detention) basins, straw bales, or fabric filters may be constructed to prevent suspended sediments from reaching down gradient watercourses, streams, lakes or wetlands.

For more information on specific BMP's for each well site please refer to the project specific data sheets in the *Stormwater Management Plan for Construction Activities in the McElmo Dome Field*.

Personnel working on location during drilling and completion of the proposed wells will be informed on appropriate measures and procedures for response to accidental spills and releases of any on site materials. Any waste generated at the locations will be removed from the sites for appropriate disposal in accordance with State and Federal regulations.

Well construction techniques incorporate specific surface casing measures to isolate the deeper target zone drilling and to minimize the potential for cross connection and potential dewatering of surface waters.

Drilling and production fluids from well drilling, completion, and operation will be removed from the locations for appropriate disposal. Releases of hazardous substances, chemicals, or fuels during construction or operation will be contained and disposed in accordance with State and Federal regulations. Personnel working at the site may be informed of spill control

procedures in accordance with a written plan. Contamination and dewatering of shallow groundwater will be minimized through casing off of the shallow zone.

3.1.9 Standards for Public Lands Health

The BLM has adopted five standards for protecting Public Lands Health. These standards are:

- Ensure healthy upland soils;
- Protect and improve riparian systems;
- Maintain healthy, productive, native plant and animal communities;
- Maintain or enhance the habitat of threatened or endangered species; and
- Ensure water quality meets minimum Colorado state standards.

The Standards describe conditions needed to sustain public land health, and relate to all uses of the public lands. Standards are applied on a landscape scale and relate to the potential of the landscape. Additional information on the standards and guidelines can be found at the Colorado BLM website: http://www.co.blm.gov/standguide.htm. Table 6 provides an evaluation of project study area standards.

3.2 NON-CRITICAL ELEMENTS

3.2.1 Fire

Natural and artificial causes of fire are common throughout the Southwest, and are an integral component of the ecosystem. Historic fire patterns are irregular but included more low intensity fires. The increase of roads, accumulated fuels from fire suppression and the spread of cheatgrass (*Bromus tectorum*) have all contributed to more widespread and high severity wildfires.

Environmental Consequences

Potential impacts include increased fire hazard as a result of more frequent human presence in the project area. Impacts are expected to be low and long-term.

Mitigation Measures

All Kinder Morgan employees should be briefed on fire hazards in the area and are committed to the prevention of human-caused fires. Adherence to other measures in the COA would minimize fire hazard potential.

Table 6. Evaluation of Project Area Standards for Public Lands Health Criteria.

	Achieving or Moving Toward Achieving	Not Achieving	Not Applicable
Standard 1	Yes		
Upland soils: proper infiltration/permeability rates			
Remarks: Proper construction techniques on the well location, access road and flowline are designed into COA, which would minimize potential erosion from this project. Once the specified reclamation measures takes place, erosion should be returned to its current level.			
Standard 2			N/A
Riparian systems functioning properly			
Remarks: No riparian areas present.			
Standard 3	Yes		
Healthy and productive plant/animal communities			
Remarks: This project would remove some early mature and mature piñon and juniper trees. These would eventually be replaced with native grasses and shrubs.			
Standard 4	Yes		
Threatened and Endangered Species			
Remarks: There would be no effect to any federally listed threatened or endangered species or potential habitat for such species.			
Standard 5	Yes		
Ensure water quality meets minimum Colorado Standards			
Remarks: No surface water in project area. Well construction techniques, Bradenhead testing, and monitoring of nearby wells would provide baseline data to assure detection of degradation in water quality.			

3.2.2 Topography

The proposed SC-11 well site is located adjacent to Moccasin Canyon on a ridgetop. The well site slopes to the northwest at approximately 3 to 6 percent. The elevation of the proposed well site is approximately 6,440 feet.

The proposed HF-3 well site is located in the Mockingbird area. The well site slopes overall to the southwest at approximately 1 to 3 percent. The elevation of the proposed well site is approximately 6,400 feet.

Environmental Consequences

Blading, excavations and trenching during construction activities would alter the existing topography of the well pad project areas. These impacts would be low to moderate and long-term. There would be no additional impacts to area topography because of drilling and operation

of the well pads, and or use of the access road. $C0_2$ resources from subterrainean geologic formations would be reduced.

Under Alternative No. 1 (Proposed Action), potential impacts to area topography would be low to moderate and long-term. These potential impacts would be mitigated by the implementation of mitigation measures described below and following adherence to Surface Use COA should the APDs be approved.

The No Action Alternative would deny Kinder Morgan's development of the proposed action. Under this alternative, there would be no impacts to project area topography.

Mitigation Measures

All disturbed areas will be re-contoured to blend as nearly as possible with the natural topography. This includes removing all berms and refilling all cuts once operations cease. Re-vegetation procedures will assist in stabilizing these re-contoured features

3.2.3 Health and Safety

Oil and gas activity related traffic occurs on unimproved (bladed) roads throughout the project study areas. These roads could be hazardous for travel during inclement weather if appropriate caution is not exercised. Potential exists for vehicle collisions with big game. Miles of high-pressure natural gas pipelines and associated facilities are present in the project area. These existing pipelines and facilities represent project construction and maintenance hazards. Damage to any of these facilities during project operations and maintenance represent health and safety risks to workers and to the general public. Specifically, the following facilities occur on or near the proposed well sites.

SC-11 Well Pad and Associated Facilities
The SC-11 well site is adjacent to an existing ROW pipeline, and access road.

HF-3 Well Pad and Associated Facilities
The HF-3 well site is adjacent to an existing ROW and access road.

CO_2 production equipment operates under high-pressure conditions that can cause failed components to become hazards if dislodged from equipment. High-pressure liquid leaks could also result in an injection hazard to unprotected skin surfaces.

H2S, an odorless, poisonous gas, may be circulated to the surface during drilling operations. A tested H2S Contingency Plan would be used during drilling of the proposed action. All necessary precautions, drills, and training are routine to protect personnel on location. H2S monitors and safety equipment would be on location and operational prior to drilling into H2S geologic sections.

Production fluids may contain low concentrations of potentially hazardous substances but consist mainly of brackish water. Potential ingestion, eye contact, or skin irritation could result from contact with production fluids.

Environmental Consequences

The proposed action could potentially result in occupational health and safety hazards to operators during the construction, drilling and operation of the proposed project, in addition to individuals that may travel or access the well pad sites. Potential hazards associated with operation of the proposed well pad include noise exposure, high-pressure liquid hazards, H2S gas releases, and chemical hazards.

Under Alternative No. 1 (Proposed Action), potential impacts from the release of hazardous materials would be low to moderate and short-term during construction and drilling and low and long-term during production operations. These potential impacts would be minimized by the implementation of mitigation measures described below and following adherence to Surface Use COA should the APDs be approved.

The No Action Alternative would deny Kinder Morgan's development of the proposed action. Under this alternative, there would be no impacts to project area health and safety.

Mitigation Measures

Signs will be posted as necessary on the proposed project facilities that identify potential hazards associated with its operation including H2S gas, noise, high pressure and chemical hazards. Material Safety Data Sheets for any treatment chemicals will be maintained on site during the construction phase. Equipment operators will be required to wear appropriate personal protective equipment to minimize exposure to these hazards. Only authorized personnel would be permitted onsite.

3.2.4 Noise

The two well sites are located in areas with limited access and moderate activities related to oil and gas development. No background noise studies have been conducted for the project study area. There are no residences, businesses, or private land located within approximately three miles of the two well sites. Ambient sound levels in the project study areas vary greatly, depending on proximity to existing facilities, roadways or other sources. Both of the well sites are adjacent to existing gravel, connector roads, primarily used for oil and gas development. These sound levels would fluctuate with variations in weather conditions including temperature, wind and humidity and the general topography of the area. Private land holdings surrounding BLM lands are primarily rural.

Environmental Consequences

During construction of the proposed action there would be a direct short-term increase in project area ambient noise levels due to the operation of heavy equipment. Construction noise would range from 80-93 db(A) during the operation of a grader, 80-82 db(A) using a bull-dozer, and 83-94 db(A) using a truck (EPA, 1971). Drilling rig sound levels would be expected to exceed other heavy equipment on location. The direct impact would be moderate and short-term. Noise impacts are expected to decrease during long-term operation and maintenance and would be dependant on the type and size of compressor or pumping equipment installed at the well (if any)

to increase production of natural gas. Operational impacts would be low and long-term. Noise impacts during operation of the well would be limited to vehicular access and maintenance activities.

Under Alternative No. 1 (Proposed Action), potential impacts from increases in areas noise generation would be low to moderate and short-term during construction and drilling and low to moderate and long-term during production operations. These potential impacts would be minimized by the implementation of mitigation measures described below and following adherence to Surface Use COA should the APDs be approved.

The No Action Alternative would deny Kinder Morgan's development of the proposed action. Under this alternative, there would be no increases to project area ambient noise levels.

Mitigation Measures

Mufflers will be utilized on all equipment during construction. Hearing protection for site workers will be available during all phases of well developments.

3.2.5 Range

Grazing is a prominent land use in the project areas. Both areas are within permitted livestock allotments.

SC-11 Well Pads and Associated Facilities
The SC-11 well site and associated facilities is located within the Burrow Point grazing allotment (#08000). The allotment is permitted for 1,083 active AUMs and 134 suspended AUMs (Mike Jensen, Range Specialist, personal communication).

HF-3 Well Pad and Associated Facilities
The HF-3 well site and associated facilities are within the Cahone Mesa grazing allotment (#08012). The allotment is currently permitted for 829 active AUMs (Mike Jensen, Range Specialist, personal communication).

Environmental Consequences

Loss of vegetation in the proposed project area would occur due to blading and trenching. Approximately 7.43 acres of vegetation would be removed as a result of the development of the proposed action. The removal of vegetation could reduce the amount of forage available for cattle and increase the potential for noxious weed infestations in the project area. This impact would be low and short-term. The reduction in forage impact would be moderate and long-term, as there would be a noticeable change in the composition of the project area vegetation. The potential for introduction of noxious weeds during construction are expected to be low to moderate and long-term. Operation of the proposed well and pipeline is not expected to affect the surrounding flora significantly and impacts are expected to be low and long-term. No impacts to existing fences or cattleguards are expected.

Under Alternative No. 1 (Proposed Action), potential impacts to grazing conditions and allotments would be low to moderate and long-term. The potential for noxious weed introduction is low to moderate and long term. Impacts from operation are expected to be low and long-term. These potential impacts would be minimized by the implementation of mitigation measures described below and following adherence to Surface Use COA should the APDs be approved.

The No Action Alternative would deny Kinder Morgan's development of the proposed action. Under this alternative, there would be no impacts to project area range conditions.

Mitigation Measures

Impacts from site clearing activities will be minimized through reclamation of the project area with weed free BLM approved seed mix (Table 7), and the project applicants noxious weed control.

Table 7. BLM Approved Seed Mix for Kinder Morgan Wells

Common Name	Species Name	Variety	Seeds/lb	PLS/ft^2	% of Mix
Indian ricegrass	*Achnatherum hymenoides*	Rimrock	141,000	32	40
Squirrel tail	*Elymus elymoides*	Bottlebrush	192,000	8	10
Blue grama	*Chondrosum gracile*	Alma	825,000	8	10
Mutton grass	*Poa fendleriana*	VNS	1,045,440	16	20
Needle and Thread	*Hesperostipa comata*	VNS	115,000	8	10
Galleta	*Hilaria jamesii*	Viva, florets	159,000	8	10

Key:
PLS = pure live seed
VNS = variety not stated

The reseeded well pads will be fenced for two years or until seedlings are well established and stable to improve site reclamation. If these areas are not fenced after reseeding cattle tend to concentrate in these locations and graze the new seedlings, thereby ruining the reclamation efforts. A fence will be installed around the perimeter of the area undergoing reclamation. Fence posts will be no more than 16 feet apart; constructed of wire; four wires of at lest 12.5 gauge, double, strand twisted; two stayed between posts; wire stretched taut between brace panels, wire spacing from the ground up: 14, 22, 30, and 42 inches. The fence will maintain in place for a minimum of 3 years, and will then be removed by Kinder Morgan upon instruction from BLM. Details on seeding and fencing for reclamation are included in the Surface Use Plan COAs in Appendix A.

3.2.6 Recreation Resources

Recreation management guidelines for BLM lands are identified in the San Juan-San Miguel RMP/EIS (1984). No Intensive/Special Recreation Management Areas or Extensive Recreation Management areas occur within a mile of the proposed well site project areas. Specifically, the closest recreation area to a well site is the Sand Canyon trail located approximately 8 miles

southeast of the SC-11 well site and 4 miles east of the HF-3 well site. While no designated recreational trails or sites are within either project area, the public may periodically undertake the following recreational activities in the project area: hunting, hiking, mountain biking, birding and horseback riding.

Environmental Consequences

Impacts to area recreation opportunities because of drilling of the proposed action would be low to moderate and short-term. The impact would shift to low but remain for the long-term during the production life of the wells. Public use of the area for limited dispersed recreational purposes may decrease due to the presence of industrial facilities in the area.

Under Alternative No. 1 (Proposed Action), potential impacts to recreational resources would be low to moderate and short-term during construction and drilling and low and long-term during production operations. These potential impacts would be minimized by the implementation of mitigation measures described below and following adherence to Surface Use COA should the APDs be approved.

The No Action Alternative would deny Kinder Morgan's development of the proposed action. Under this alternative, there would be no impacts to project area recreation resources.

Mitigation Measures

Kinder Morgan will provide public notices, signs, detours and precautions and/or warning necessary to protect the health and safety of the public. Noise impacts on recreation will be reduced through the use of hospital grade mufflers. Visual impacts would be mitigated to the extent possible as described in Section 3.2.11.

3.2.7 Socioeconomics

Oil and gas development in the Paradox and San Juan basins makes the industry a large employer in southwestern Colorado. The State of Colorado, Montezuma County and the Federal government collect a large amount of revenues from mineral development royalties in the project area. These projected revenues fluctuate with volumes generated, weather, world affairs, market prices for natural gas and oil and other variables.

Temporary jobs would be generated by construction of the proposed action. These jobs would last for several months. Kinder Morgan's costs to develop the proposed action would be realized as economic gains to contractors and businesses in the project area. Restaurants and other service businesses may benefit in the short-term from the presence (purchasing) of work crews in the project area.

Environmental Consequences

No adverse socioeconomic impacts are expected to occur as a result of developing the proposed project. There would be low and short-term beneficial economic impacts for a variety of contractors and businesses as a result of development of the proposed action. Additionally there would be moderate beneficial impacts generated in the form of royalties.

Mitigation Measures

No mitigation measures required.

3.2.8 Soils

SC-11 Well Pad and Associated Facilities
The proposed well pad and access road ROW consists of Sharps-Pulpit complex, 6 to 12 percent slopes, forming on hillsides and mesa tops. This is a deep and very well drained soil with moderately slow permeability. The available water capacity is low and the effective rooting depth is 20-40 inches. The shrink-swell potential is low and runoff is high and the hazard of water erosion is severe (NRCS, 1997). Biological soil crusts on the project site are extensive and well-developed.

HF-3 Well Pad and Associated Facilities
Surveyed soil type for the well location consists of Romberg-Crosscan complex 6 to 25 percent slopes, forming on hillsides and mesa tops. This soil is a very deep and well drained soil, with moderately slow permeability. The available water capacity is low and the effective rooting depth is 60 inches or greater. The shrink-swell potential is moderate and runoff is high and the hazard of water erosion is severe (NRCS, 1997).

Environmental Consequences

Approximately 7.43 acres of soil would be directly disturbed in the construction of the proposed well pads. The proposed action would result in temporary displacement, compaction and mixing of soils in the project area. Accidental spills or releases of hazardous substances could result in soil contamination requiring remediation or removal. Due to the susceptibility of the project area soils to wind and water erosion, construction activities would indirectly cause an undetermined amount of loss of upper soil layers including destruction of biological soil crusts. Biological soil crusts are composed primarily of cyanobacteria, green algae, microfungi, mosses, liverworts, and lichens. These crusts provide soil stability and provide a positive influence on plant germination. Reduced capacity for plant growth due to removal and/or disturbance of the soil would be an additional indirect effect. Biological soil crust development would take approximately 20 to 50 years after reclamation to form again.

Under Alternative No. 1 (Proposed Action), impacts to soils from construction of the proposed project would have low to moderate and long-term impacts.

During the operation and maintenance phase of the proposed action, stabilization and reclamation of unused areas should reduce the amount of soil disturbance. The impact from operation and maintenance would be low to long-term. These potential impacts would be mitigated by the implementation of mitigation measures described below and following adherence to Surface Use COA should the APDs be approved.

The No Action Alternative would deny Kinder Morgan's development of the proposed action. Under this alternative, there would be no impacts to project area soils.

Mitigation Measures

Mitigation measures for construction and operation of the well consist of stockpiling topsoils, reclamation and reseeding unused areas of the pads and pipelines with a weed-free BLM approved seed mix (refer to Table 7) to stabilize soils and to prevent erosion in areas no longer needed for production. Kinder Morgan will utilize BMPs to control erosion during construction of the proposed project, and during site reclamation. Vehicle and pedestrian traffic will be restricted to the project ROWs or established roads to prevent further soil mixing and compaction outside the proposed project area. If soils are too wet, defined as leaving a 4-inch rut for ten linear feet, work will cease until soils dry. Spills or releases of hazardous or solid wastes will be removed and disposed in accordance with State and Federal regulations. The proposed project area disturbance will be re-seeded with a weed-free BLM approved seed mix to stabilize soils and prevent erosion for areas no longer needed for production. Seed labels from each bag shall be available for inspection while seeding is being accomplished. There shall be no primary or secondary noxious weeds in the seed mixture. Should re-vegetation attempts fail, Kinder Morgan will repeat re-seeding until the seeding is successful.

The well pad areas will be bermed to minimize off-site migration of disturbed soils. Vehicle and pedestrian traffic will be restricted to the well pad, access road and well-tie areas or established roads to prevent further soil mixing and compaction outside the proposed project area. Specific erosion control measures, should the proposed action be permitted, would be included in the BLM Surface Use COA. Upon plugging and abandonment of the well following its useful life, the entire well pad and access road will be reseeded to BLM specifications.

3.2.9 Sensitive Species

The CANM was identified in the monument proclamation as home to a wide variety of wildlife species, including unique herpetological resources. Habitat for the long-nosed leopard lizard and twin-spotted spiny lizard (desert spiny lizard) may be found within the monument. Additionally, there are 17 BLM species of concern and sensitive species as well as 21 birds of conservation concern. Table 8. provides a listing of BLM sensitive species compiled from the Colorado BLM State Director's Sensitive Species List (2000), and a list of Birds of Conservation Concern from the USFWS Division of Migratory Bird Management (2002).

The project was surveyed for potential habitat of sensitive species on April 27, 2006 by a BLM biologist and BLM botanist and on May 6, 2006 by a biologist from Ecosphere Environmental Services. The potential for TES species to occur in the project area is presented in Table 8. Only the long nose leopard lizard has potential to occur in the project areas (Nickell 2006).

Environmental Consequences

Under Alternative No. 1 (Proposed Action), impacts to sensitive species would be limited to the long-nosed leopard lizard. Potential impacts to longnose leopard lizards include loss or degradation of potential habitat. If present beneath rocks or other cover, it is possible that individuals could be killed during site ground clearing activities. No longnose leopard lizards were identified during the on-site visits to the proposed project sites. Potential impacts would be low and short-term during construction and drilling operations, and low and long-term as a result

Table 8. BLM Sensitive Species with Potential to Occur Within the San Juan Field Office Management Area and/or the Project Area.

S1-Critically Imperiled, S2- imperiled, S3-Vulnerable, S4-Apparently Secure, B-Breeding population, K-Known to occur in the SJPA, L-Likely to occur in the SJPA, P-Possible to occur in the SJPA.

Common Name	Scientific Name	CNHP Status	Habitat	Potential to Occur in Project Area (PA)
MAMMALS				
Allen's big-eared bat	*Idionycteris phyllotis*	No CNHP status	Roosts are associated with mines/caves. Known to forage in pinyon-juniper woodlands.	No mines or caves in PA.
Big free-tailed bat	*Nyctinomops macrotis*	S1	Rocky cliffs with crevices and fissures required for roosting.	No rocky cliffs with crevices in PA.
Spotted bat	*Euderma maculatum*	S2	Cliff dwellers with diurnal roosts in cracks and crevices of canyons and cliffs. Known to forage in pinyon-juniper woodlands.	No rocky cliffs with crevices in PA. Forage habitat in PA.
Townsend's big-eared bay	*Corynorhinus townsendii*	NO CNHP status	Dependent on availability of abandoned or inactive mines.	No mines or caves in PA.
Fringed myotis	*Myotis thysanodes*	S3	Breeds in caves and forages in piñon-juniper woodlands.	No mines or caves in PA. Forage habitat in PA.
Yuma myotis	*Myotis yumanensis*	No CNHP listing	Requires surface water and suitable roost sites in mines or caves.	No perennial water sources, mines or caves in PA.
BIRDS				
Black tern	*Chlidonias niger*	No CNHP status	Nests in inland marshes of the North American prairie, winters at sea.	No inland marshes or prairies in PA.
Nothern goshawk	*Accipter gentilis*	S3B	Nests found on north aspects in aspen stands above 8,250 ft. Also know to nest in conifer stands including ponderosa pine.	PA elevation below 8,250 feet (approximately 6,400). No suitable nesting habitat in PA.
White-faced ibis	*Plegadis chihi*	S2B	Associated with shoreline and marsh habitats bordering open water.	No potential habitat in PA due to lack of riparian areas.
Peregrine falcon	*Falco peregrinus anatum*	S3B	Prefers open country and high vertical cliff areas for nesting (>200 feet).	No suitable nesting habitat in AA
Ferruginous hawk	*Buteo regalis*	S3B	Nests next to open areas (grassland or shrubsteppe) in elevated sites: trees, rock outcrops, buttes, haystacks, and low cliffs.	Potential foraging habitat occurs in the chained piñon/juniper and sagebrush shrublands in PA, during the winter only. No nesting habitat occurs in PA.
FISH				
Chub, Roundtail	*Gila robusta*	S2	Inhabits pools and rapids of moderate to large rivers.	No perennial water sources exist within the PA
Sucker, Bluehead	*Catostomus discobolus*	No listing	Inhabits headwater streams to large rivers.	No perennial water sources exist within the PA.
Sucker, Flannelmouth	*Catostomus latipinnis*	S3	Inhabits headwater streams to large rivers.	No perennial water sources exist within the PA.
Trout, Colorado River Cutthroat	*Oncorhynchus clarki pleuriticus*	S3	Occurs in headwater streams and lakes.	No perennial water sources exist within the PA.

Table 8. (Continued)
BLM Sensitive Species with Potential to Occur Within the San Juan Field Office Management Area and/or the Project Area.

Species Common Name	Scientific Name	CNHP Status	Habitat	Potential to Occur in Project Area (PA)
REPTILES and AMPHIBIANS				
Desert spiny lizard	*Sceloporus magister*	CANM	Habitat present by stream channels seems to be essential for the species.	No potential habitat in PA due to lack of riparian areas.
Long nose leopard lizard	*Gambelia wislizenii*	CANM	Generally below 5000 feet in extreme western Colorado associated with desert shrub.	Potential habitat for long nose leopard lizard exists in project area.
PLANTS				
Jones blue star	*Amsonia jonesii*	K	Runoff-fed draws on sandstone in pinyon-juniper, and desert shrub communities, 3,900 to 7,000 feet	No potential habitat within project area.
Cronquist Milkvetch	*Astragalus cronquistii*	K	Black brush and desert scrub on sandy, gravelly ridges of sandstone on Mancos Shale and substrates of Morrison Formation. 4800'-5800'..	No potential habitat exists in PA.
Naturita Milkvetch	*Astragalus naturitensis*	K	Shallow pockets of soil on Sandstone mesas, ledges, crevices and slopes in PJ woodlands (5000-7000 ft)	No potential habitat exists in PA.
Giant Helleborine	*Epipactus gigantean*	L	Decomposed sandstone; sandstone seeps; <8,000 feet	No habitat within analysis area
Kachina Daisy	*Erigeron kachinensis*	K	Saline soils in seeps in canyon walls (4800-5600').	No seeps or canyon walls in PA
Comb Wash Buckwheat	*Eriogonum clavellatum*	K	Shale badlands in salt desert shrub.	No Shale badlands in PA.
Eastwood monkey-flower	*Mimulus eastwoodiae*	K	Shallow caves and seeps on canyon walls, 4,700 to 5,800 feet	No habitat within analysis area

Source: Colorado BLM State Directors' Sensitive Species List, BLM Information Bulletin No. CO-2000-14 (April 2000) including CNHP listed species and CANM Proclamation sensitive species, Kathy Nickell and Leslie Stewart, personal communication.

of development and operation of the wells and loss of potential habitat. These potential impacts would be mitigated by the implementation of mitigation measures described below and following adherence to Surface Use COA should the APDs be approved.

The No Action Alternative would deny Kinder Morgan's proposed action. Under this alternative, there would be no impacts to project area sensitive species.

Mitigation Measures

Construction activities for both well sites will be confined to the proposed well pad, access road and flowline ROWs to avoid potential impacts to sensitive species possibly occurring outside the area surveyed during the biological survey. Should any sensitive species be identified during construction or operation of the proposed project, BLM resource specialists should be contacted immediately

3.2.10 Vegetation

SC-11 Well Pad and Associated Facilities

The proposed SC-11 site is located within an area of previously chained piñon/juniper (*Pinus edulis/Juniperus* osteosperma) woodland and sagebrush (*Artemisia tridentata.*) shrubland vegetation mosaic. The overstory canopy cover is approximately 30 to 40 percent and the understory canopy cover is approximately 40 percent. Understory vegetation is comprised of cliffrose (*Purshia stansburiana*), snakeweed (*Gutierrezia sarothrae*) and Mormon tea (*Ephedra viridis*) and yucca (*Yucca* spp). Tree heights range from 6 to 12 feet and the shrubs heights are from 2 to 8 feet. Groundcover species included cheatgrass (*Bromus tectorum*) and groundsel (*Senecio multilobatus*). Common ground cover species were difficult to determine because of pre-growing season conditions. Appendix A provides a complete list of plants occurring in the project area as recorded during the biological survey.

HF-3 Well Pad and Associated Facilities

The proposed HB-4 well site is located within a heavily chained piñon/juniper woodland (*Pinus edulis/Juniperus* osteosperma) and sagebrush (*Artemisia tridentata.*) shrubland vegetation mosaic. Tree heights are approximately 6 to 15 feet in height with an estimated canopy cover of 30 to 40 percent. Shrub cover within this piñon/juniper woodland was estimated to be approximately 20 percent. Associated shrub species include cliffrose (*Purshia tridentata*) rabbitbrush *(Chrysothamnus nauseosus*), and snakeweed (*Gutierrezia sarothae*). Ground cover species included cheatgrass (*Bromus tectorum*) wheatgrasses (*Agropyron* spp.), tumblemustard (*Sisymbrium altissimum*) and spiny gilia (*Leptodactyon pungens*). Other ground cover species were difficult to determine due to pre-growing season conditions. Appendix A provides a complete list of plants occurring in the project area as recorded during the biological survey.

Environmental Consequences

SC-11 Well Pad and Associated Facilities

Loss of vegetation in the proposed project area would occur due to blading and trenching. Approximately 3.18 acres of piñon-juniper trees and shrubland and forbs would be removed as a result of the development of the proposed action. The removal of vegetation could reduce the amount of forage available for wildlife and increase the potential for noxious weed infestations in the project area. This impact would be moderate and short-term, as there would be a noticeable change in the composition of the project area vegetation. As unused areas of the well pad are reclaimed, impacts would shift to low and long-term. Operation of the proposed pipeline and well could potentially affect the surrounding flora in the event of accidental spills or discharge of production fluids. These impacts during operation would be low and long-term.

HF-3 Well Pad and Associated Facilities

Loss of vegetation in the proposed project area would occur due to blading and trenching. A total of approximately 3.18 acres of successional piñon/juniper woodland and shrubland and forbs would be removed as a result of the development of the proposed action. The removal of vegetation could reduce the amount of forage available for wildlife and increase the potential for noxious weed infestations in the project area. This impact would be moderate and short-term, as there would be a noticeable change in the composition of the project area vegetation. As unused areas of the well pad are reclaimed, impacts would shift to low and long-term.

Operation of the proposed pipeline and well could potentially affect the surrounding flora in the event of accidental spills or discharge of production fluids. These impacts during construction and operation would be low and long-term

Under Alternative No. 1 (Proposed Action), potential impacts to vegetation on both well sites would be low to moderate and short-term, after site reclamation and low and long-term during operation of the wells. These potential impacts would be minimized by the implementation of mitigation measures described below and following adherence to Surface Use COA should the APDs be approved. The No Action Alternative would deny Kinder Morgan's development of the proposed action. Under this alternative, there would be no impacts to project area vegetation.

Mitigation Measures

Reclamation, including re-seeding and noxious weed management, of the project area is discussed in detail in the BLM Surface Use Conditions of Approval. Specifically the site will be re-shaped to pre-disturbance contours, stockpiled topsoil will be spread and re-seeded with a native seed mix specified by the BLM. Woody material removed during site construction will be scattered over reclaimed site to provide shade and protection for seedlings. The seeded area will be fenced for two years or as long as necessary to protect it from livestock until a healthy cover of native plant species is established. Seeding with the designated seed mix will occur as many times as necessary to establish the vegetation successfully.

The fence will be removed from the site by Kinder-Morgan when vegetative cover is established. Noxious and invasive weeds will be treated on the well pad, road and pipeline for the life of the well and until reclamation efforts post production are successful in providing a healthy cover of native plant species. Stripped topsoil and vegetation will be stockpiled for subsequent reclamation of unused areas of the well pads. Kinder Morgan will initiate re-vegetation at the direction of the BLM following construction for areas no longer required for production operations. Monitoring for noxious weeds and appropriate treatment and controls will be the responsibility of Kinder Morgan. Any spills or releases of hazardous substances will be cleaned up and disposed of in accordance with applicable requirements and spill plans.

3.2.11 Visual Resources

SC-11-Well Pad and Associated Facilities

The well pad project should not be visible from any Highway. The well site would be visible from the existing access road, which is located adjacent to the well pad project area, and aerially. The SC-11 well site is located approximately 15 miles from the Cross Canyon Outstanding Scenic Area (OSA), 12 miles from the Goodman OSA, and 15 miles from the Mesa Verde OSA.

HF-3 Well Pad and Associated Facilities

The well site should not be visible from any Highway. The well site would be visible from the existing access road which is located adjacent to the well pad project area and aerially. The HF-3 well site is located approximately 12 miles from the Cross Canyon OSA, 23 miles from the Goodman OSA, and 25 miles from the Mesa Verde OSA.

Environmental Consequences

The visual resources of the land within the immediate vicinity of the two well pad project areas would be permanently altered by the proposed action. During construction activities, machinery emissions, disturbed ground, and construction equipment and pipe staging in the project area would result in low and short-term, visual impacts. From the vistas of the Goodman and Mesa Verde OSA's, the tower of the drill rigs may be visible during the drilling of the wells, resulting in low , short-term potential impacts. The proposed action would not be visible from the Cross Canyon OSA. During the production and maintenance phase of the proposed action, visual impacts would be low and the long-term.

Under Alternative No. 1 (Proposed Action), potential impacts to area visual resources would be low to moderate and short-term during construction and long-term during production operations. These potential impacts would be minimized by the implementation of mitigation measures described below and following adherence to Surface Use COA should the APDs be approved.

The No Action Alternative would deny Kinder Morgan's development of the proposed action. Under this alternative, there would be no impacts to project area visual resources.

Mitigation Measures

All trash materials will be removed from the area and disposed of in an authorized disposal area. All disturbed areas will be re-contoured to blend as nearly as possible with the natural topography. This includes removing all berms and refilling all cuts. Re-vegetation procedures would assist in minimizing visual disruption. All permanent structures (onsite for six months or longer) constructed or installed will be painted a flat, non-reflective earth tone color, which would be Beetle (Munsell Color Chart).

3.2.12 Wildlife

Wildlife with potential to occur in the project area includes a variety of mammals, birds, and reptiles common to southwestern Colorado. A list of wildlife commonly occurring in the CANM is included in Appendix B.

Ecosphere biologists conducted biological investigations of the project area on May 6 2006, and BLM biologists conducted surveys on April 27, 2006. Signs of rabbit (i.e. scat) were noted at both well sites. Unidentified lizards where seen, and a woodrat (*Neotoma* sp.) nest was observed on the HF-3 well site. Numerous common birds including crows, scrub jays, western bluebirds, and sparrows utilize the project area. Both well sites provide potential raptor foraging habitat. No raptors or raptor nests were observed within the project area at the time of the surveys. No aquatic species occur within the project areas.

Mule deer and elk are year-round residents in the project area. According to the San Juan-San Miguel Resource Management Plan, there are no designated deer or elk winter range or concentration areas are within the project area. Both species tend to migrate between forested lands at higher elevations in the spring and summer to woodlands at lower elevations in the fall and winter. Average herd densities are relatively low in the woodland areas in summer (2-3

deer/square mile) due to the large amount of available habitat (RMP, 1984). Winter herd densities are relatively high (200 deer/square mile) on crucial winter ranges because snow depths limit habitat availability (BLM 1984).

Environmental Consequences

The removal of 7.43 acres of vegetation in both the well sites would result in a direct loss of wildlife habitat in the CANM. Construction activities could directly impact area wildlife due to increased noise and human activity. These activities are expected to have low to moderate impacts and short-term.

The duration of construction activities would be for a period of approximately three to four weeks for each well site, thereby limiting the severity of potential impact to a short time period. Some mortality or displacement of small-burrowing animals and reptiles may occur during blading and trenching of the proposed well pad, access road and flowline.

There would be long-term disturbances to area wildlife during operation of the well from periodic human activity, vehicular traffic in the area, and from the conversion of habitat to industrial use. These impacts are expected to be low to moderate and long-term.

Wintering big game animals may avoid the area due to noise, increased traffic, and equipment operations during production operations. The potential impacts to big game during operation are expected to be low and long-term based on the limited availability of public access to suitable wintering habitats during winter months.

Under Alternative No. 1 (Proposed Action), potential impacts to area wildlife would be low to moderate and short-term during construction and drilling shifting to low to moderate and long-term during production. These potential impacts would be minimized by the implementation of mitigation measures described below and following adherence to Surface Use COA should the APDs be approved.

The No Action Alternative would deny Kinder Morgan's development of the proposed action. Under this alternative, there would be no impacts to project area wildlife.

Mitigation Measures

Construction activities will be confined to the proposed well pad, access road and flowline right-of-ways to minimize disruption to wildlife for the four well sites. The impact to wildlife caused by the removal of vegetation will be mitigated through the implementation of reclamation measures outlined in the BLM Surface Use COA.

4.0 CUMULATIVE IMPACTS

Cumulative impacts are an aggregate of direct and indirect impacts and include actions that have occurred or can be reasonably expected to occur both within and outside of the project area in the future.

According to the RMP and the 1991 Oil and Gas Amendment (BLM, 1991), for the San Juan/San Miguel Planning Area (SJ/SMPA), approximately 2% (1,430 acres) of the surface area within the management area would be impacted by oil and gas activities by 2009. That considers the potential drilling of 353 wells with an average surface disturbance of 4.1 acres per well (BLM 1991). The total disturbance for the proposed action is approximately 7.43 acres. The estimated reasonable foreseeable development (RFD) scenario includes, 188 "development wells" on BLM lands within the Paradox Basin, the geologic basin encompassing the project analysis area. According to BLM records no more than 125 development wells have been drilled in the Paradox Basin on BLM lands. Therefore, the addition of Kinder Morgan's 2 proposed wells is within the number of wells planned for in the RMP and 1991 amendment.

In order to further consider cumulative impacts within the CANM, an analysis of Colorado Oil and Gas Conservation Commission (COGCC) records within the project area was made to quantify existing oil and gas disturbance within a 1-mile and 5-mile radius of each proposed well site. Provided below are the results of this analysis. Table 9 contains a listing of facilities within a 1-mile and 5-mile radius of each of wells in the proposed action. Total disturbance estimated for each project is based on the above estimate of 4.1 acres per well.

Table 9. Existing wells located within a 1-mile and 5-mile radius of Kinder Morgan proposed wells in Montezuma County, Colorado.

Type of Well	Well #SC-11		Well #HF-3	
	1-mile radius	5-mile radius	1-mile radius	5-mile radius
Abandoned Location	-	6	-	9
Drilled and Abandoned	-	8	-	12
Injecting	-	-	-	3
Plugged and Abandoned	-	8	-	-
Producing	5	20	4	21
Shut-in	-	-	-	1
Temporarily Abandoned	-	10	-	-
Permitted Location	-	-	-	1

Colorado Oil and Gas Conservation Commission, 2006

The 7.43 acres of disturbance associated with the development of the proposed SC-11 and HF-3 well sites would result in cumulative impacts to soils, wildlife, and vegetation. The removal of

7.43 acres of wildlife habitat would contribute to the habitat fragmentation that exists throughout the area from existing roads, pipelines, and well pads. Less noticeable cumulative impacts include increases in impacts to local air resources and noise levels during construction. Impacts to local air resources would primarily result from dust created by vehicular travel on unpaved roads, and exhaust from rig and vehicle operation. These impacts are expected to be short-term, and of low impact.

It is intended that reclamation measures would minimize the majority of cumulative impacts from the proposed action. As new development occurs in some areas, plugging and abandonment, including final reclamation, occurs in other areas. The reclamation would offset impacts associated with new development. In some cases, upon completion of final reclamation and abandonment, the general health of the land, including wildlife/livestock forage, soil stability, etc., has proven to be in a healthier state than surrounding areas that have remained undisturbed.

Cumulative effects within the context of present activities and the basis for the effects determination are summarized in Table 10. Overall, cumulative impacts are expected to be low and in conformance with the RMP and 1991 Oil and Gas Amendment.

Table 10. Kinder Morgan Well Sites SC-11 and HF-3 Cumulative Impacts Summary

Environmental Resource	Environmental Consequences	Cumulative Impact	Basis For Determination
Vegetation	Vegetation and habitat loss due to numerous operating wells, access roads and pipelines. Increase of invasive species, as well as loss of biological soil crusts.	Low-Moderate	Proposed action would result in 7.43 acres of disturbance constructed in Piñon-Juniper woodlands and shrublands.
Threatened, Endangered & Sensitive Flora Species	Potential loss of unidentified listed species due to development.	Low	No listed or sensitive species or critical habitat in two well site project areas. Conclusion determined in biological assessment.
Soils	Soil transfer and erosion, road damage, rutting, as less as loss of biological soil crusts.	Low	Consequences directly related to number of wells, volume and frequency of traffic in the area.
Surface Water	Potential low impacts to surface water from sediments and other pollutants.	Low	Lack of perennial surface water resources in the project area.
Groundwater	Potential contamination of ground water resources from leakage.	Low	Minimal groundwater use in project area, approved construction procedures to reduce potential contamination.
Wildlife	Fragmentation and loss of habitat, noise disturbance, wildlife/vehicle encounters.	Low to Moderate	Proposed project would result in 7.43 acres of disturbance constructed in Piñon-Juniper woodlands and shrublands.
Threatened, Endangered and Sensitive Fauna Species	Potential low impacts to long-nosed leopard lizard. No other impacts to listed or sensitive species.	Low	No listed species or critical habitat in well site project areas. Potential habitat for longnose leopard lizard.
Air Quality	Nominal increase in air quality pollutants from natural gas equipment and traffic.	Low	Impacts are dispersed and relatively minor for construction of two wells.
Cultural Resources	Disturbance of identified/unidentified archaeological sites during construction and operation.	Low	Required mitigation measures in Conditions of Approval
Health and Safety	Increased vehicular travel and	Low	Difficult roads restrict vehicle speeds

	vehicle/wildlife/human encounters, high pressure and chemical hazards.		
Recreation	Increased traffic noise and visual impacts.	Low	Limited dispersed recreation throughout the two well sites.
Range	Loss of 7.43 acres of forage	Low	Size of acreage allotments in relation to loss of forage is minimal
Visual	Reduction in overall visual quality in the project area.	Low to Moderate	Mitigation measures can reduce visual impacts of development.
Noise	Increase in noise levels	Low	Levels of noise
Socioeconomic	Increase in employment during construction and revenues for nearby communities.	Low	Positive economic impact on surrounding communities.

The cumulative effects of the proposed action would combine with other surface related disturbing activities, including uranium development, grazing, recreation, etc. Impacts related to these types of activities typically include, but are not limited to, road construction, soil compaction, littering, loss of vegetation, etc. It is not anticipated that the total combined cumulative effects would exceed any threshold established by law, the Resource Management Plan, or the Responsible Official.

5.0 CONSULTATIONS

Individuals and agencies listed below have been consulted in the preparation and review of this Environmental Assessment:

Lucas Vargo- BLM/FS Natural Resource Specialist
Bob Salter- BLM Natural Resource Specialist
Lou Ann Jacobson - BLM Canyons of the Ancients Manager
Eric La Price – BLM/FS Biological Scientist/NEPA Coordinator
Mike Jensen - BLM Range Management Specialist
Kathy Nickell - BLM Wildlife Biologist
Leslie Stewart - FS Ecologist
Linda Farnsworth - BLM Archaeologist
Larry Hammack- CASA Archaeologist
Penny Wu-BLM/FS Recreational Specialist
Bob Clayton - Kinder Morgan
Norman Utley - Utley Construction

The following organizations were contacted during preparation of this document.

U.S. Fish and Wildlife Service regarding listed flora and fauna
Colorado National Heritage Program regarding Montezuma County species of concern
BLM State Director's List of BLM Sensitive Species

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APPPENDIX A

BLM CONDITIONS OF APPROVAL

Surface Use Conditions of Approval

Kinder Morgan CO_2 Company, LP (Kinder Morgan)
HF-3 and SC-11 Development Wells
Montezuma County, Colorado

Well Name	Surface Location
HF-3	828' FNL, 84' FWL, Section 7, T37N, R18W
SC-11	850' FNL, 1,793' FWL, Section 8, T36N, R18W

The following Conditions of Approval (COA) take precedence over any or all terms and conditions set forth in the APD Surface Use Plan. Kinder Morgan and its contractors should refer to these COA and the Surface Use Plan for specific information associated with construction, drilling, production, and reclamation.

The COA are presented below by type of on site activity expected for both Kinder Morgan wells.

Special Conditions of Approval

1. Big game timing limitation dates are **December 1 through April 30**. **Big game winter range timing limitations applies to the well noted above**. No drilling, completion, or work-over activities are allowed during the timing limitation periods. Normal operation and maintenance activities are allowed.
2. A copy of these Conditions of Approval and the operators Surface Use Plan should be on location at all times.

Conditions of Approval

Construction and Drilling

1. The operator or his contractor will contact the authorized officer, at the Canyons of the Ancients Office in Dolores, Colorado; seven (7) days before beginning any surface-disturbing activities and before beginning any reclamation.

   - Lucas Vargo (970) 882-6845 or
   - LouAnn Jacobson (970) 882-5600

2. Standard wording for COA related to cultural and paleontological resources is as follows:

   - If subsurface cultural resources are unearthed during operations, activity in the vicinity of the cultural resource will cease and a BLM representative notified immediately (either Linda Farnsworth at (970) 882-5600 or Lucas Vargo at (970) 882-6845). Pursuant to 43 CFR 10.4 the holder of this authorization must notify the

authorized representative, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, the operator must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the authorized officer.

- The operator is responsible for informing all persons associated with this Project that they will be subject to prosecution for knowingly disturbing Native American Indian shrines, historic and prehistoric archaeology sites, or for collecting artifacts of any kind, including historic items and/or arrowheads and pottery fragments from Federal lands.

3. The operator will assure that all Project-related vehicle traffic is limited to the bladed/traveled road surface. No pullouts or off-road parking will be allowed unless specifically authorized. "Keep vehicles on the road surface" signs must be installed by the operator to assist with compliance as needed. No shortcutting by any motor vehicles operated by employees or contractors, on roads not identified as access routes in the APD. Vehicular access to the pad will be strictly limited to authorized vehicles only; these vehicles are restricted to use on the drill pad only -no off pad or off road parking.

4. Surface disturbing activities will not be conducted during extended wet periods or when vehicles and/or construction equipment will leave excessive ruts and damage to roads associated with the Project. Kinder Morgan and the BLM will not allow any construction or routine activities during periods when the soil is too wet to adequately support construction equipment. If such equipment creates surface ruts in excess of 4 inches in depth, for a length of at least 10 feet, Kinder Morgan and the BLM will deem that soil conditions are too wet to adequately support construction equipment. Construction activities will not be allowed until soil conditions improve.

5. The roads and well pads shall be wetted down and compacted where needed to avoid dust and loss of soil. If production is achieved, a minimum of 18-inch culverts will be placed in the permanent road as needed and as outlined in the oil and gas Gold book to reduce erosion. BLM may require additional culverts, if erosion or road damage is not well-controlled by initial construction.

6. All brush, limbs, crushed stumps and other woody material will be stockpiled separately from the topsoil just outside the well pad perimeter. The stripped vegetation and 6 inches of topsoil shall be stockpiled separately just outside the well pad perimeter. The stripped vegetation shall not be removed from the location (it will be used later for reclamation). If the topsoil stockpile is not used within six months it will be seeded to insure topsoil integrity and prevent erosion.

7. The reserve pit will be sealed in such a manner as to prevent leakage of the fluids. Methods available to insure containment of drilling fluids in the reserve pit include lining the inside of the pit with at least 12 millimeter plastic. If a plastic liner is used, the bottom of the pit shall be smooth and free of any sharp rocks. If the pit has a rocky bottom, it shall be bedded with a geotextile material to avoid the possibility puncturing

the liner. A minimum of not less than a 2-foot freeboard will be maintained in the pit at all times. All oil or floating debris will be removed from the pit immediately after the drilling phase of the well.

8. During the drilling phase of the program, a perimeter fence will be placed around both pits. This shall be fenced on three (3) sides, and built in such a manner as to prohibit entry of wildlife. The fence shall be constructed with "woven wire." Measures should also be taken to prohibit avian species from entering the pit area. The fourth side of the pit area will be fenced immediately upon removal of the drilling rig and the fencing will be maintained until all pits are backfilled. In the event that one pit is closed prior to the other, the perimeter fence will then be placed around the remaining opened pit until such time as it is backfilled. At no given time, shall any open pit be unfenced.

9. Prior to rigging up, a one foot high berm will be constructed around the perimeter of the well pad in such a manner as to contain all storm events/spills from going downstream of the well pad. A partial berm is acceptable, but the down-slope side of the well pad must be protected (above the fill slopes). Drainages from the berm shall be armored and have an apron at the discharge end to disperse the water. A lined sump pit may be utilized to contain such fluids. The well pad will be designed in such a manner as not to allow runoff water to enter the pad. The need for the berm will be reassessed upon the completion of the well and production is established.

10. Heavy equipment will be pressure-washed at an offsite location prior to entering the site. This is a preventive measure for reducing noxious weed infestation at the drilling sites. If equipment is moved directly from site to site while on this Project, then pressure washing between sites is not required. However, if equipment is removed from a site, used elsewhere, then brought back to the Project Area, pressure washing is required before the equipment can be used in the Project Area. This pertains to heavy equipment such as bulldozers, backhoes, etc. Pickup trucks and passenger vehicles do not require pressure washing prior to entering these sites.

11. The integrity of any fence and associated cattle guard must not be compromised during the construction, production, or reclamation phase of the well. All cattle guards, gates, and fence brace panels should be well constructed and regularly maintained. Toxins, such as ethylene glycol, should be kept off the ground where livestock can reach them. The operator is responsible for noting these problems in the field and correcting them before the function of fences/cattleguards/gates is comprised. Once notified by the BLM that a problem exists and that the BLM attributes it to the operator's activities, the operator has 24 hours to correct fence/cattleguard/gate problems resulting from their activities.

12. Water withdrawals from surface waters require prior approval from the State of Colorado regardless of private land ownership along or around the water source. Colorado requests notification two weeks prior to the beginning of surface waters withdrawals to determine if there is a call on or below the withdrawal point. Regardless of when or how fresh water is used, the State of Colorado will be notified and allowed to respond before water

is withdrawn from any surface waters in Colorado. The contact office for South Western Colorado is the Division of Water Resources in Durango, Colorado (970-247-1845), and for the Water Commissioner for the Dolores River is (970) 533-1333. After the drilling operations are completed a final estimate of the volume of water used for all activities should be submitted in writing to the State of Colorado. If required by the state of Colorado, the operator must apply and obtain water rights prior to water withdrawals.

13. An "eyebrow ditch" shall be installed above the locations on the up-hill side. The intent of the eyebrow ditch is to intercept surface water flows, and disperse the water to either side of the location. The ends of the ditch, or "daylight" ends should be placed in native soils, within undisturbed areas.

Production

1. All permanent structures (on site for six months or longer) constructed or installed will be painted with a flat, non-reflective, earth-tone color which will be **Shale Green** (5Y 4/2) from the list of 10 standard environmental colors designated by the Rocky Mountain Regional Coordinating Committee (RMRCC), and the PANTONE Architecture and Interiors Color Guide, 2003.

2. All production equipment shall be equipped with hospital type mufflers. Regardless of whether the operation is at the construction, drilling, or production phase, if the BLM determines that noise has become a nuisance, additional muffling techniques will be applied to achieve adequate noise reduction and acceptable noise levels.

3. Noxious weeds which may be introduced due to soil disturbance or reclamation will be treated by methods to be approved by the Authorized Officer. These methods may include biological, mechanical or chemical treatments. Should chemical or biological treatment be requested, the operator must submit a Pesticide Use Proposal to the Authorized Officer 60 days prior to the planned application date (see Reclamation COA #7).

4. The roads shall be maintained reasonably smooth, and free of ruts in excess of 3-4 inches, soft spots, chuckholes, rocks, slides and washboards. The BLM, San Juan Resource Area road specifications and "Gold" book shall be followed for specifications on road design and culvert installation. All weather surfacing will be required if well becomes a producer. A regular maintenance program shall include blading, ditching, sign replacement, surfacing, and culvert maintenance. The operator is required to correct maintenance deficiencies when documented and directed by the Authorized Officer. All vehicles servicing the well are restricted to use of the approved access road and well pad.

5. Accidental spills will be cleaned up immediately, and contaminated soils will be removed to a State Permitted disposal site. BLM reporting procedures will be followed.

6. The reserve pit and that portion of the location and access road not needed for production or production facilities will be reclaimed as described in the reclamation section.

7. Compaction and construction of the berms surrounding the tank or tank batteries will be designed to prevent lateral movement of fluids through the utilized materials, prior to storage of fluids. The berms must be constructed to contain at a minimum 120 percent of the storage capacity of the largest tank within the berm.

   All load lines and valves shall be placed inside the berm.

8. No gravel or other related minerals from new or existing pits on Federal land will be used in construction of roads, well sites, etc., without prior approval from the Surface Managing Agency.

Reclamation

The surface use plan lists a proposed seed mix that is not consistent with the seed mix identified in this EA. For consistency, BLM will require that the seed-mix shown in the table below be used at this site.

1. Immediately upon completion of the well, all trash and debris will be collected from the location and the surrounding area and removed to an approved sanitary landfill.

2. Portions of the well pad deemed unnecessary for production shall be shaped to conform to the natural terrain. Topsoil stockpiled during construction should be spread back over the recontoured areas. Portions of the access road deemed unnecessary for production should also be reseeded. The seed mixture shown in the table below shall be used. The seed should be distributed by broadcasting. The woody materials stockpiled during construction are to be spread evenly back over the reclaimed and seeded areas (see COA #6 below).

Table A-1 -- Seed Mix – Pinyon-Juniper Area

Common Name	NRCS Variety	Pure Live Seed (PLS) (lbs/acre broadcast rate)
Indian Ricegrass	Rimrock	4.9
Squirreltail	Bottlebrush	3.6
Winterfat	VNS	0.9
Blue grama	Alma	1.3
Needle and Thread	VNS	4.5
Total		**15.2**

If the seed is broadcast, application rates will be twice the drilled rate and some means such as a rake or harrow will be used to incorporate the seed into the soil. Certified weed-free mulch may be required on locations with an inadequate supply of removed vegetation.

The seed mixture used must be ***certified*** weed free. There shall be NO primary or secondary noxious weeds in the seed mixture. Seed labels from each bag shall be

available for inspection while seeding is being accomplished. **The seeding contractor shall keep a record of the dates seeding was accomplished for each site and shall send that information along with the seed labels from each bag to Lucas Vargo or Cara Gildar at the Dolores Public Lands Office** (P.O. Box 210, 29211 Highway 184, Dolores, CO 81323).

In the event grasses and native vegetation are not established after the first seeding application, subsequent applications will be required until grasses and/or native vegetation are established, as per the standards shown in Reclamation COA #8 below.

3. Notify Surface Managing Agency (Lucas Vargo at 970-882-6845) seven (7) days prior to seeding so that they may be present to witness reseeding activities.

4. Upon final reclamation, all compacted areas and areas devoid of vegetation on location shall be ripped, along the contour, to a minimum of 6 inches in depth before the re-spread of topsoil and subsequent reseeding.

5. Upon final reclamation, all access roads will be shaped to conform to the natural terrain and left as rough as possible to deter vehicle travel. Access will be ripped, along the contour when possible, to a minimum depth of 6 inches, water barred and reseeded. All erosion problems created by the development must be corrected prior to acceptance of release. Water bars should be spaced as shown below along the fall line of the slope:

Slope (%)	Spacing Interval (feet)
Less than 2 %	200
2 to 4 %	100
4 to 5 %	75
5 to 10 %	50
10 to 15 %	30

6. The brush, limbs, crushed stumps and other woody material stockpiled during construction, if any, should be spread back over reclaimed areas and associated pipelines after seeding. This organic debris will provide cover and stabilizing material for the soil, seed mix, and young plants.

7. The Permit Holder (Holder) shall be responsible for control of all State listed noxious weed species on all disturbed areas. The Holder is responsible for consultation with the Authorized Officer and local authorities for acceptable weed control methods, and shall comply with the following:

   a) Use of pesticides shall comply with all applicable Federal and State laws. Pesticides shall be used only in accordance with their registered uses within limitations imposed by the Secretary of the Interior. Prior to the use of pesticides, the Holder shall obtain approval from the Authorized Officer of a Pesticide Use Proposal showing the type and quantity of material to be used, pests to be controlled, method of application, locations of

storage and disposal of containers, and any other information deemed necessary by the Authorized Officer.

b) All pesticide applicators must hold a valid Colorado Qualified Supervisor license or Certified Operator license, and the license must be valid for the applicable pesticide application category. **For all areas treated, Pesticide Application Records (BLM Form 3-3-94) must be submitted to the BLM Dolores Field Office by November 1 of each year**. Pesticide Application Records must be completed no later than 14 days following the pesticide application and must be maintained for ten years.

8. The following standards will be applied to determine the success of reclamation efforts. Reclamation should be considered successful when the desired vegetative species are established, erosion is controlled, weeds are considered a minimal threat, and it is likely that ground cover will return to a desirable condition. The following parameters should be used to determine the success of re-vegetation efforts.

   a) Successful onsite establishment of species included in the planting mixture or other desirable species.

   b) Evidence of vegetation reproduction, either spreading by rhizomatous species or seed production

   The operator should continue re-vegetation efforts, at the direction of BLM, until these standards are met.

9. The period of liability under the bond of record will not be terminated until the well is inspected and the surface rehabilitation approved.

10. A fence shall be installed around the perimeter of the area undergoing reclamation. The fence shall be maintained in a manner to prevent cattle from entering the area, and shall be constructed as follows: Posts to be no more than 16' apart; fence wire: four wires of at least 12.5 gauge, double strand twisted; two stays between posts; wire stretched taut between brace panels, wire spacing from the ground up: 14", 22", 30", 42". The fence shall be maintained in place for a minimum of 3 years, and will be removed by the Operator when so instructed by BLM.

11. All reserve pit fluids must be removed or evaporated from the pit before starting reclamation procedures. Enhanced evaporation of the reserve pit fluids shall have prior approval of the authorized officer. The liner shall be cut off at the mud level and removed to an approved disposal site. The reserve pit must be reclaimed within 12 months (but no later than the following August 31) from the date the well is spudded. The reserve pit solids will not be squeezed out of pit, however the solids may be mixed with stockpiled materials as the pit is reclaimed. Mixing stockpiled materials and reserve pit solids can facilitate drying the reserve pit solids (by mixing damp solids with dry dirt), aid in compaction of materials in the pit, prevent subsequent settling of the pit, and

shorten the time needed for the reserve pit reclamation. There will be a minimum of 2 feet of overburden on the pit prior to replacing the topsoil and seeding.

APPENDIX B

BLM FISH AND WILDLIFE CLEARANCE LETTER
PLANT AND WILDLIFE LIST

FISH AND WILDLIFE CLEARANCE REPORT

PROJECT NAME: Kinder Morgan Well Site Proposal SC-11 and HF-3

Table 1. Survey Results.

X	A field survey was completed on 6 May 2006 by **Ecosphere Environmental Services.**					
	No field survey is required.					
	A field survey is needed, but cannot be completed by required date due to:					
	Inappropriate season		Inadequate lead time		Higher priorities	

SPECIES CONSIDERED

Table 2. Federally listed species for the San Juan National Forest and San Juan BLM Resource Area based on April, 2006 list from the FWS.

Species	Status	Habitat Present In Project Area?	Species Affected?
Canada lynx	Threatened	**No**	**No**
Bald eagle	Threatened	**No**	**No**
Gunnison sage grouse	Candidate	**No**	**No**
Mexican spotted owl	Threatened	**No**	**No**
Southwestern willow flycatcher	Endangered	**No**	**No**
Yellow-billed cuckoo	Candidate	**No**	**No**
Bonytail	Endangered	**No**	**No**
Colorado pikeminnow	Endangered	**No**	**No**
Humpback chub	Endangered	**No**	**No**
Razorback sucker	Endangered	**No**	**No**
Uncompahgre fritillary butterfly	Endangered	**No**	**No**
Sclerocactus mesae-verdae	Threatened	**No**	**No**
Astragalus humillimus	Endangered	**No**	**No**
Astragalus tortipes	Candidate	**No**	**No**
Pediocactus knowltonii	Endangered	**No**	**No**
Ipomopsis polyantha var. polyantha	Candidate	**No**	**No**

Table 3. Colorado Bureau of Land Management sensitive fish, plant, and wildlife species based on Information Bulletin No. CO-2000-14 (April 2000) for the San Juan Public Lands.

Species	Habitat Present In Project Area?	Species Impacted?
Allen's big-eared bat	**No**	**NA**
Big free-tailed bat	**No**	**NA**
Fringed myotis	**No**	**NA**
Spotted bat	**No**	**NA**
Townsend's big-eared bat	**No**	**NA**
Yuma myotis	**No**	**NA**
Black tern	**No**	**NA**
Ferruginous hawk	**No**	**NA**
Northern goshawk	**No**	**NA**
White-faced ibis	**No**	**NA**
Bluehead sucker	**No**	**NA**
Colorado River cutthroat trout	**No**	**NA**
Flannelmouth sucker	**No**	**NA**
Roundtail chub	**No**	**NA**
Desert spiny lizard	**No**	**NA**
Longnose leopard lizard	**Yes**	**Possible**
Amsonia jonesii	**No**	**NA**
Astragulus cronquistii	**No**	**NA**
Astragulus naturitensis	**No**	**NA**
Astragalus ripleyi	**No**	**NA**
Astragalus sesquiflorus	**No**	**NA**
Carex scirpoidea	**No**	**NA**
Carex viridula	**No**	**NA**
Cryptogramma stelleri	**No**	**NA**
Epipactis gigantea	**No**	**NA**
Erigeron kachinensis	**No**	**NA**
Eriogonum clavellatum	**No**	**NA**
Lesquerella pruinosa	**No**	**NA**
Lygodesmia doloresensis	**No**	**NA**
Mimulus eastwoodiae	**No**	**NA**
Pediomelum aromaticum	**No**	**NA**
Salix candida	**No**	**NA**

DISCUSSION:

This project does not conflict with RMP guidelines.

Potential habitat for longnose leopard lizards exists in the project areas and vicinity although site elevations over 5,000 feet limit the potential for occurrence. If present, potential impacts to longnose leopard lizards include loss or degradation of potential habitat. If present beneath rocks or other cover, it is possible that individuals could be killed during site ground clearing activities. No longnose leopard lizards were identified during the on-site visits to the proposed project sites.

MITIGATION MEASURES

No mitigation measures have been identified for this project.

CONCLUSIONS

Threatened and Endangered Species

X	There are no federally listed or proposed species known to occur within the project area.
	The proposed action will have no effect on the following federally listed or proposed species:
	The proposed action will have **no effect on designated or proposed critical habitat** for the following species:
	The proposed action **may affect but is not likely to adversely affect** the following federally listed species and their habitats. *Effects are expected to be beneficial, insignificant (unmeasurable), or discountable (extremely unlikely).*
	The proposed action **may affect and is likely to adversely affect** the following federally listed species and their habitats. *Effects are expected to be adverse or detrimental.*

Forest Service and BLM Sensitive Species

X	The proposed action will have **no impact** on all of the sensitive species listed in Table 3 with the exception of the longnose leopard lizard:
	The proposed action will have a **beneficial impact** on the following sensitive species: **None**
	The proposed action **may adversely impact individuals but is not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability range wide** on the following sensitive species: **Longnose leopard lizard**
	The proposed action **may adversely impact individuals and is likely to result in a loss of viability on the planning area, in a trend to federal listing, or in a loss of species viability rangewide** on the following sensitive species: **None**

A Biological Evaluation is not required for BLM sensitive species so this Clearance Form completes the assessment of these species.

SPECIALIST Date:

PLANTS OCCURRING IN THE KINDER MORGAN CO_2 GAS WELL PROJECT AREAS

Forbs:	
Descurainia pinnata	tansy mustard
Leptodactylon pungens	spiny gilia
Senecio multilobatus	groundsel
Sisymbrium altissimum	tumblemustard
Grasses:	
Agropyron cristatum	crested wheat
Agropyron smithii	wheatgrass
Bromus tectorum	cheatgrass
Shrubs:	
Amelanchier utahensis	serviceberry
Artemisia tridentata	big sagebrush
Chrysothamnus nauseosus.	rubber rabbitbrush
Gutierrezia sarothrae	broom snakeweed
Ephedra viridis	Mormon Tea
Purshia stansburiana	Stansbury cliff rose
Purshia tridentata	antelope-bitterbrush
Yucca baccata	wild banana yucca
Yucca harrimaniae	yucca
Cacti:	
Opuntia polyacantha	prickly pear cactus
Echinocereus triglochidiatus	hedgehog cactus
Trees:	
Juniperus osteosperma	Utah juniper
Pinus edulis	Piñon pine

COMMON WILDLIFE WITH POTENTIAL TO OCCUR IN THE KINDER MORGAN CO_2 GAS WELL PROJECT AREAS

Mammals

Canis latrans	Coyote
Cervus elaphus	American Elk
Cynomys gunnisonii	Gunnison's prairie dog
Dipodomys spectobilis	Bannertail kangaroo rat
Erethizon dorsatum	Porcupine
Lepus californicus	Blacktail jackrabbit
Mephitis mephitis	Striped skunk
Odocoileus hemionus	Mule deer
Sylvilagus auduboni	Desert cottontail
Ursus americanus	Bear
Vulpes vulpes	Red fox

Birds

Apelocoma coerulescens	Scrub jay
Buteo jamaicensis	Red-tailed hawk
Carpodacus mexicanus	House finch
Cathartos aura	Turkey vulture
Chordeiles minor	Common nighthawk
Colaptes auratus	Northern flicker
Corvus corax	Common raven
Eremophila alpestris	Horned lark
Euphagus cyanocephalus	Brewer's blackbird
Falco spaverius	Sparrow hawk
Gymnorhinus cyanocephalus	Piñon jay
Pica pica	Black-billed magpie
Sialia mexicana	Western bluebird
Sturnella neglecta	Western meadowlark
Turdus migratorius	Robin

Reptiles

Crotalus viridis	Prairie rattlesnake
Pitulophis melanoleucus	Bull snake
Sceloporus stansburiana	Side-blotched lizard
Sceloporus graciousus	Sagebrush lizard