Kerr-McGee’s Bonanza Area Environmental Assessment and Biological Assessment

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Kerr-McGee’s
Bonanza Area
Environmental Assessment and
Biological Assessment

Location: Township 10 South, Range 23 East
Applicant/Address: Kerr-McGee, Oil and Gas Onshore LP
1368 South 1200 East
Vernal, Utah 84078

U.S. Department of the Interior
Bureau of Land Management
Vernal Field Office
170 South 500 East
Vernal, Utah 84078
Phone: 435-781-4400
Fax: 435-781-4410
FINDING OF NO SIGNIFICANT IMPACT
AND
DECISION RECORD
Kerr-McGee’s Bonanza Area Environmental Assessment
Uintah County, Utah
EA# UT-080-2006-240

FINDING OF NO SIGNIFICANT IMPACT:

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

DECISION:

It is my decision to approve and authorize the Bonanza Area natural gas well development project and to proceed as set out in Alternative C (the Proposed Action with Additional Protection Measures) of the Kerr Mc-Gee Bonanza Area EA (UT-080-06-240), subject to the attached Applicant Committed Measures as well as the Additional Protection Measures. No additional conditions of approval were identified for the selected alternative. The decision includes the following:

- 95 wells and pads;
- approximately 43.6 miles of roads;
- approximately 77.4 miles of pipeline;
- approximately 20 miles of electrical power line and one electrical sub-station; and

Due to the programmatic nature of this document, further site-specific review and environmental documentation may be required in association with the review of the Application for Permit to Drill, sundry notice, or Right-of-Way application.

RATIONALE:

The decision to approve the selected alternative has been made in consideration of the identified environmental impacts of Alternative A (the Proposed Action), Alternative B (the No Action Alternative), and Alternative C (the Proposed Action with Additional Protection Measures).

Consistency with Plans, Statutes, and Regulations:

The selected alternative is in conformance with the 1985 Book Cliffs Resource Area Resource Management Plan (BCRMP), which states that gas and oil resources will be developed on lands deemed suitable for that purpose under a scenario that gives adequate environmental protection. The selected alternative is also consistent with the Uintah County Plan for Management of the Book Cliffs Resource Area (Uintah County Plan, Uintah County Commissioners 2005). The Uintah County Plan emphasizes multiple-use public land management practices, responsible use, and optimum utilization of public land resources. Multiple-use is defined in the plan as including, but not limited to, the following historically and traditionally practiced resource uses: grazing, recreation, timber, mining, oil and gas development, agriculture, wildlife habitat, and water resources, as they become available or as new technology allows.

How the Selected Alternative meets the Need and Objectives for the Project:

Kerr-McGee's need for the project is to produce gas on approximately 40-acre spacing from valid leases underlying the Bonanza Project Area. Their objective is to conduct the development and expansion in the most economical manner possible while minimizing impacts to the environment to the extent practicable. BLM's objective in the project was to allow development of those lease rights held by Kerr-McGee in an environmentally sensitive manner.

These objectives are met by the selected alternative because the proposed action was developed by the Applicant in conjunction with BLM and incorporates applicant-committed mitigation measures that are considered appropriate for the project and its setting. Additional mitigation measures were identified, based on potential impacts, and incorporated into Alternative C, the selected alternative. The selected alternative is therefore a variation or alternative to the proposed action that meets the applicant's purpose and need as well as the BLM's objectives.

Why the Other Alternatives were not Selected

Environmental analyses were carried through the EA for Alternative A (Proposed Action), Alternative B (No Action) and Alternative C (Proposed Action with Additional Protection Measures). In addition, three (3) other alternatives were initially considered, but eliminated from further analysis.

Alternative A (Proposed Action) was not selected because it would have resulted in environmental impacts (including impacts to golden eagles, ferruginous hawks, Swainson's hawks, western burrowing owls, greater sage grouse, and paleontological resources) that could have been minimized or eliminated. This would have been contrary to BLM's objective for the project.

The No Action Alternative was not selected because it will not allow the applicant to fully develop natural gas resources underlying their federal leases. This would have been contrary to the applicant's purpose and need for this project.

The alternative that would have required placing all pipeline above ground on all of the applicant's leases within the project area was eliminated from detailed analysis because surface pipelines of that size would create difficulties for access within the Project Area. In addition, surface pipelines 12-inches in diameter or larger would have been a human health and safety concern. Also, those pipelines would have limited or impeded mobility of wildlife.

An alternative was considered that would have required a higher well spacing pattern (i.e., 20-acre). However, the Applicant determined that a higher spacing pattern was not necessary at this time in order to adequately drain natural gas resources of the Project Area.
Directionally drilling across the entire field was eliminated from detailed analysis due to:

1) **Directional drilling costs**: including the larger rig size, larger required well pads, added drilling rig days, and additional services and specialty tools associated with the drilling operations.

2) **Directional drilling risks**: including technical challenges that may increase operational risks during drilling and/or completion of a given well.

3) **Technical difficulties**: including a short reach window, which would require a steep angle for directionally drilled wells on 40-acre spacing. The primary reason such steep angles would be required is because of the severe lost circulation zone in the Green River formation, which would require Kerr-McGee to set approximately 2,000 feet of surface casing for directionally drilled wells. To start building angle at 2,000 feet, drill 1,320 feet horizontally, and be near vertical at the top of the Wasatch at approximately 4,300 feet, the well bore angles would have to be aggressive. Other analog fields in the Rockies that have utilized field wide directional drilling generally can either start building angle near the surface or have a longer vertical section which minimizes the well bore angles.

4) **Casing and tubing wear**: which leads to a reduced operating life of the well and results in lower natural gas recoveries in the area penetrated by the well bore. In addition, increased casing and tubing wear also translates to more remedial workover activity for a given well bore. This results in increased well downtime and a higher average workover expense. This effectively reduces the economic well life, also translating into a reduced ultimate natural gas recovery.

5) **Plunger lift efficiency and water production**: Most of the wells in the Bonanza Area are expected to ultimately produce via plunger lift operations. Plunger lift unloads the associated produced water from the well bore allowing it to flow more natural gas. The deviated well path of a directional well reduces the efficiency of plunger lift operations and may add additional costs and therefore reduces the ultimate efficiency/recovery of a typical well.

However, directional drilling on a site-specific basis to reduce or avoid environmental impacts is in no way precluded by the elimination of this alternative. The need for directional drilling to reduce surface impacts will be determined during the site-specific analysis that will occur for each APD.

**CONSULTATION:**

Consultation has been conducted and completed with the U.S. Fish and Wildlife Service. An Environmental Assessment/Biological Assessment was sent to their office on January 24, 2007 with a request for concurrence regarding the impacts associated with the Bonanza project. In the response dated January 30, 2007, the USFWS concurred with the may affect not likely to adversely affect determinations for Uinta Basin hookless cactus, Ute ladies'-tresses, bald eagle, Mexican spotted owl, and yellow-billed cuckoo. In addition, they concurred that the proposed project, including mitigation measures, would not jeopardize the establishment of ferrets in the release area. Due primarily to water depletions, a determination of may affect, likely to adversely affect, the four Colorado River endangered fish (Colorado pikeminnow, bonytail, humpback chub, and razorback sucker) was made by the BLM. The USFWS’s biological opinion waived the depletion fee for this project, since the average annual water depletion was less than 100 acre-feet. See Appendix F of the Final EA.
Consultation with Utah State Historic Preservation Officer (USHPO) was not conducted due to the programmatic nature of this document and its inherent lack of specificity. Consultation with USHPO will occur on a site-specific basis, as necessary, in association with the review of the Application for Permit to Drill, sundry notice, or Right-of-Way application.

Consultation with the Northwestern Band of the Shoshone, Ute Mountain Ute, Confederated Tribes of the Goshute Reservation, Eastern Shoshone, Hopi, Ute Indian Tribe, Navajo Nation, Zia Pueblo, Laguna Pueblo, and Paiute Indian Tribe of Utah was initiated on September 21, 2006. No response was received, therefore consultation is considered to be closed.

PUBLIC INVOLVEMENT

A description of the proposed project, along with a map showing the proposed action, was posted on BLM’s Environmental Notification Bulletin Board (ENBB) on September 8, 2006. BLM received one letter from the public on October 10, 2006, which requested a public comment period.

A public comment period was held from October 30, 2006 through November 13, 2006. The BLM received six written comment letters specific to the Bonanza project, and approximately 33,000 form letters or emails referencing development within the White River wilderness inventory area and areas with or likely to have wilderness characteristics. The 33,000 comment letters and emails focused on proposed development within the White River wilderness inventory area. The comment letters and emails also offered recommendations ranging from approval of the project, to preparation of an EIS. Several comments recommended additional or revised analysis of resource issues. None of the comments provided substantive new information relevant to this project. Responses to relevant comments are included in Table 5.3-1 of the Final EA, and appropriate changes were made. Any changes that could affect potential impacts have been analyzed in Chapter 4.0 of the EA. None of the edits warranted an additional public review period.

[Signature]
APM Minerals

Date 2-5-2007
**Language for an Administrative Review**

This decision is effective upon the date it is signed by the authorized officer. The decision is subject to appeal. Under BLM regulation, this decision is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of this decision must include information required under 43 CFR 3165.3(b) *State Director Review*, including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, Utah State Office, P.O. Box 45155, Salt Lake City, Utah 84145-0155, within 20 business days of the date this decision is received or considered to have been received.

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

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

Public Health and Safety

To minimize the possibility of fires during construction and operation, all equipment, including welding trucks, will be equipped with fire extinguishers.

No chemicals subject to reporting under SARA Title III in an amount equal to or greater than 10,000 pounds will be used, produced, stored, transported, or disposed of annually, nor will extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, be used, produced, stored, transported, or disposed in association with the drilling, testing or completing of the proposed wells.

Trash will be confined in a covered container and hauled to an approved landfill. Burning of waste, chemicals or hydrocarbons will not be done. Human waste will be contained and disposed of at an approved sewage treatment facility.

Vehicle traffic will be limited to existing roads and trails and approved ROWs.

Vehicles will travel at speeds within set speed limits of main access roads and at slower speeds appropriate for conditions on more remote roads and trails.

Air Quality

Members of the construction and drilling crew will be encouraged to car pool to and from surrounding cities and towns to minimize vehicle-related emissions.

As needed or determined necessary by the SMA AO, Kerr-McGee will apply water to project-related roads to reduce fugitive dust from vehicle traffic.

Cultural Resources

Kerr-McGee will instruct all employees or contractor supervisors that collection or intentional destruction of archaeological resources on the Project Area is illegal. Employees and contractor supervisors will also be instructed that vehicles and construction equipment must always remain on existing roads or along corridors/locations approved for surface disturbance. Such instruction will help prevent unintentional damage to cultural resources.

Prior to the construction process, a Class II and III cultural resources survey will be completed by an archaeologist acceptable to the AO on all areas proposed for surface disturbance. Should any significant cultural resources be located, the AO will implement avoidance strategies. Suggested avoidance strategies could include one or a combination of the following:
o Re-location of the well site or re-routing of the access road/pipeline corridor away from the cultural resource;

o Directional drilling (where feasible) of the well to avoid surface disturbance on a cultural resource;

o Elimination of the location from the overall development plan.

Clearance for each surface-disturbing project will be given by the SMA AO.

If deemed appropriate by the SMA, construction activities within specific portions of the pipeline and power line corridors will be monitored for the presence of cultural resources. Should any significant cultural resources be located, one or a combination of the above-outlined avoidance strategies will be implemented.

Should construction activities uncover cultural resources, all construction work will immediately cease and the AO contacted for further instruction.

Floodplains/Wetlands/Riparian Zones

No development is planned in the White River floodplain, wetland or riparian zones. If however, site-specific on-sites determine that such resources will be involved, Utah BLM’s existing riparian policy will apply, i.e., no new surface disturbing activities will be allowed within 100 m (330 feet) of riparian areas, unless it can be shown that 1) there are no practical alternatives, 2) all long-term impacts can be fully mitigated, or 3) the activity will benefit or enhance the riparian area. (UT-IM-93-93).

No refueling or lubricating will take place within 100 feet of wetlands and other water bodies or drainages.

Hazardous materials, chemicals, fuels, etc., will not be stored within 100 feet of wetlands or surface waters.

Invasive and Noxious Weeds

To reduce the spread/introduction of noxious and invasive weed species via project-related vehicles and equipment into the Project Area, Kerr-McGee’s contractors entering the field from outside the Uinta Basin will power-wash all construction equipment and vehicles prior to the start of construction.

Project employees and contractors will not be allowed to drive off-road (unless on approved ROWs).
Weed control on BLM land will be conducted through an approved Pesticide Use Proposal (PUP). Components of this proposal will include conducting annual spring baseline inventories to determine the location and extent of weeds species in areas proposed for development; identify follow-up treatments methods to effectively control identified weeds and outline subsequent monitoring to assess the effectiveness of treatment.

To further minimize the introduction and/or spread of weeds, only certified weed-free erosion control and reclamation materials (i.e., straw bales and seed mixes) will be used.

**Livestock Grazing**

Employees and sub-contractors will be instructed to watch for grazing livestock during the period December 5 through April 30 to reduce potential of collisions with grazing livestock that may wander onto roads.

No roads, pipelines, well pads or other gas facilities will be placed within a 200-meter distance of existing livestock facilities, such as corrals or watering facilities. If there is no means to avoid these facilities, mitigation to replace them will be implemented, as directed by the AO.

Each existing fence to be crossed will be braced and tied off before cutting the wire. If the crossing is temporary, a wire gate will be installed until work is completed and then the fence immediately repaired. If the crossing is permanent, e.g., a road access, the braces will be at a minimum of 2-7/8 inches outside diameter (OD) steel pipe, in order to reduce the need for maintenance and to increase the life of the fence. The braces will consist of three posts and two top rail-braces. The brace posts will be cemented in the ground to a minimum depth of at least 3 feet and welded with a 2-7/8 inch top rail, with any open ends capped. The height of the brace posts will be 42 inches from the ground to the top of the brace. A 16-foot steel Powder-River-type gate will be welded to the fence brace post adjacent to the cattle guard.

Cattleguards will be installed on concrete bases and will meet AO standards.

**Visual Resources**

Kerr-McGee will paint tanks and other facilities to blend with their surroundings in accordance with the site-specific requirements that will be specified by the AO.

Kerr-McGee will avoid, where feasible, the placement of facilities and power poles on hill tops or along ridge lines in visually sensitive areas. If facilities could not be relocated off ridge lines or hill tops in visually sensitive areas, Kerr-McGee will consider the use of tanks with a smaller height as directed by SMA Authorized Officer.
Geology/Mineral Resources/Energy Production

Mining claim holders will be invited to participate in the on-site process for proposed site-specific projects that could involve current and/or pending mining claims.

The BLM will be notified if any solid minerals are contacted during construction of well pads and/or access roads.

Fire Management

All brush build-up around mufflers and other engine parts will be avoided; periodic checks will be conducted to prevent this build-up.

All personnel will be advised that campfires or uncontained fires of any kind are prohibited.

ADDITIONAL PROTECTION MEASURES

Cultural Resources

If deemed appropriate by the SMA/AO, construction activities within specific portions of the buried pipeline and power line corridors will be monitored for the presence of buried cultural resources.

Should any significant cultural resource be located, all construction activities will immediately cease and the SMA/AO will be notified for additional guidance and direction.

Threatened, Endangered and Candidate Species

Prior to any project-related surface disturbance, all locations proposed for surface disturbance will be examined by a wildlife biologist and botanist approved by the applicable SMA to determine if any federally threatened or endangered species are present. If present and prior to initiating any surface disturbance activities, the SMA and the FWS will implement appropriate avoidance measures.

Uinta Basin Hookless Cactus

In order to minimize effects to the federally threatened Uinta Basin hookless cactus, the Bureau of Land Management (BLM) in coordination with the U.S. Fish and Wildlife Service (Service), developed the following avoidance and minimization measures. Integration of and adherence to these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance) are in
compliance with the Endangered Species Act (ESA). Kerr-McGee will adhere to the following avoidance and minimization measures:

1. Pre-project habitat assessments will be completed across 100 percent of the project disturbance area within potential habitat\(^1\) prior to any ground disturbing activities to determine if suitable Uinta Basin hookless cactus habitat is present.

2. Within suitable habitat\(^2\), site inventories will be done to determine occupancy. Inventories:
   a. Must be conducted by qualified individual(s),
   b. Will be conducted in suitable and occupied\(^3\) habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected, and during appropriate flowering periods:
      i. *Sclerocactus brevispinus* surveys should be conducted March 15\(^{th}\) to June 30\(^{th}\), unless extended by the BLM
      ii. *Sclerocactus wetlandicus* surveys can be done any time of the year, provided there is no snow cover,
   c. Will occur within 115 feet from the centerline of the proposed right-of-way for surface pipelines or roads; and within 100 feet from the perimeter of disturbance for the proposed well pad including the well pad,
   d. Will include, but not be limited to, plant species lists and habitat characteristics, and
   e. Will be valid until March 15\(^{th}\) the following year for *Sclerocactus brevispinus* and one year from the survey date for *Sclerocactus wetlandicus*.

3. Design project infrastructure to minimize impacts within suitable habitat:
   a. Reduce well pad size to the minimum needed, without compromising safety,
   b. Limit new access routes created by the project,
   c. Roads and utilities should share common right-of-ways where possible,
   d. Reduce width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,
   e. Place signing to limit off-road travel in sensitive areas,
   f. Stay on designated routes and other cleared/approved areas, and
   g. All disturbed areas will be re-vegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas.

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\(^1\) Potential habitat is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment.

\(^2\) Suitable habitat is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain Uinta Basin hookless cactus. Habitat descriptions can be found in the U.S. Fish and Wildlife Service’s 1990 Recovery Plan and Federal Register Notices for the Uinta Basin hookless cactus (http://www.fws.gov/endangered/wildlife.html).

\(^3\) Occupied habitat is defined as areas currently or historically known to support Uinta Basin hookless cactus; synonymous with “known habitat.”
4. Within occupied habitat, project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:
   a. Follow the above (#3) recommendations for project design within suitable habitats,
   b. Buffers of 100 feet minimum between the edge of the right of way (roads and surface pipelines) or surface disturbance (well pads) and plants and populations will be incorporated,
   c. Surface pipelines will be laid such that a 100 foot buffer exists between the edge of the right of way and the plants, use stabilizing and anchoring techniques when the pipeline crosses the habitat to ensure the pipelines don’t move towards the population,
   d. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,
   e. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,
   f. Designs will avoid concentrating water flows or sediments into occupied habitat,
   g. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and
   h. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.

5. Occupied Uinta Basin hookless cactus habitats within 100 feet of the edge of the surface pipelines’ right-of-ways, 100 feet of the edge of the roads’ right-of-ways, and 100 feet from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports will be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service.

6. Reinitiation of section 7 consultation with the Service will be sought immediately if any loss of plants or occupied habitat for the Uinta Basin hookless cactus occurs as a result of project activities.

7. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

8. No herbicide spraying will be allowed within 300 feet of Uinta Basin hookless cactus individuals. Any weed control work to be done in suitable and/or occupied habitat for this species will be completed by hand.
Black Footed Ferret

If construction would be planned in or near an active prairie dog complex in the future, BLM will identify the potential for the presence of black-footed ferrets during the APD on-site inspection. The proponent then shall notify BLM before construction is to begin, so BLM can determine whether any further monitoring would be necessary.

Colorado River Fish

Depending on the water year, larval fish may be present in the Green, Colorado, Gunnison, and Yampa Rivers from as early as April 1 to as late as August 31 (earlier in dry years; later in wet years)

1. To avoid entrainment, water should be pumped from an off-channel location – one that does not connect to the river during high spring flows. An infiltration gallery constructed in a BLM and Service approved location is best.
2. If the pump head is located in the river channel where larval fish are known to occur, the following measures apply:
   a. the pump will not be situated in a low-flow or no-flow area as these habitats tend to concentrate larval fishes;
   b. the amount of pumping will be limited, to the greatest extent possible, during that period of the year when larval fish may be present (see above); and
   c. the amount of pumping will be limited, to the greatest extent possible; during the pre-dawn hours as larval drift studies indicate that this is a period of greatest daily activity.
3. All pump intakes will be screened with ¼” mesh material.
4. Any fish impinged on the intake screen will be reported to the Service (801.975.3330) and the Utah Division of Wildlife Resources:

Northeastern Region
152 East 100 North, Vernal, UT 84078
Phone: (435) 781-9453

Raptors

Prior to any construction between 1 January and 31 August, all precipitous areas and treed areas within 0.5 mile of proposed construction sites will be surveyed for the presence of raptor nests. If occupied raptor nests are found, construction, drilling and completion will not occur within species-specific buffer radii during the species-specific active nesting season, unless topographic or vegetative characteristics obscured visual and auditory impacts from the nest. If surveys identify raptor nests in the Project Area, species-specific buffer radii and timing restrictions (Table 1, below) will be applied as directed by the AO. No permanent facilities will be constructed within 0.25 mile of the nest site.
<table>
<thead>
<tr>
<th>Species</th>
<th>Spatial Buffer around Active Nest</th>
<th>Timing Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferruginous Hawk</td>
<td>0.5 mi</td>
<td>March 1 – July 15</td>
</tr>
<tr>
<td></td>
<td>0.25 mi</td>
<td>No permanent structures constructed within</td>
</tr>
<tr>
<td>Burrowing Owl</td>
<td>0.5 mi</td>
<td>April 1 – August 15</td>
</tr>
<tr>
<td>Osprey</td>
<td>0.5 mi</td>
<td>April 1 – July 15</td>
</tr>
<tr>
<td>Swainson’s Hawk</td>
<td>0.5 mi</td>
<td>April 1 – July 15</td>
</tr>
<tr>
<td>Northern Goshawk</td>
<td>0.5 mi</td>
<td>April 15 – August 20</td>
</tr>
<tr>
<td>Short-eared Owl</td>
<td>0.5 mi</td>
<td>April 10 – June 15</td>
</tr>
<tr>
<td>Prairie Falcon</td>
<td>0.5 mi</td>
<td>April 1 – July 15</td>
</tr>
<tr>
<td>Merlin</td>
<td>0.5 mi</td>
<td>April 15 – June 25</td>
</tr>
<tr>
<td>American Kestrel</td>
<td>0.5 mi</td>
<td>May 1 – June 30</td>
</tr>
<tr>
<td>Turkey Vulture</td>
<td>0.5 mi</td>
<td>May 15 – August 15</td>
</tr>
<tr>
<td>Cooper’s Hawk</td>
<td>0.5 mi</td>
<td>May 1 – August 15</td>
</tr>
<tr>
<td>Sharp-shinned Hawk</td>
<td>0.5 mi</td>
<td>Jun 20 – August 15</td>
</tr>
<tr>
<td>Northern Harrier</td>
<td>0.5 mi</td>
<td>April 1 – July 15</td>
</tr>
<tr>
<td>Red-tailed Hawk</td>
<td>0.25 mi</td>
<td>April 1 – July 15</td>
</tr>
<tr>
<td>Great Horned Owl</td>
<td>0.25 mi</td>
<td>February 1 – May 15</td>
</tr>
<tr>
<td>Long-eared Owl</td>
<td>0.5 mi</td>
<td>March 15 – June 15</td>
</tr>
<tr>
<td>Mexican Spotted Owl</td>
<td>0.5 mi</td>
<td>March 1 – August 1</td>
</tr>
</tbody>
</table>

To minimize possible raptor/vehicle collisions in the greater Project Area, reports of carrion along roadways will be reported to UDWR.

**Mexican Spotted Owl**

In order to protect Mexican spotted owl and their habitat the following survey and protection protocols will be put into effect: No surface disturbing activities will be allowed within "good" and "fair" habitat designations until the end of the two survey seasons in accordance with USFWS protocol. If MSO are documented, BLM will follow USFWS protocol for Protected Activity Center (PAC) establishment. In order to protect Mexican spotted owl and their habitat, the following survey and protection protocols will be put into effect:
o No surface disturbing activities will be allowed within "good" and "fair" habitat
designations until the end of the two survey seasons.

o Surface pipelines may be installed within boundaries of this "good" and "fair"
habitat, outside of the timing restrictions, as long as there will be no surface
disturbance or permanent structures installed.

o With the exception of canyon habitat, well pad construction and drilling will be
allowed within the 0.5 mile buffer after the first season of surveys is completed,
outside of the timing restriction and only if no owls have been detected. The
second season of surveys will still be required for these 0.5 mile buffer areas.

o If no owls have been detected at the completion of the two seasons of calling
surveys, the timing restriction shown in Table 1 above will no longer be required
for the areas of "good" and "fair" habitat, or the 0.5 mile buffer.

o If more than four years have elapsed between the end of the two seasons of survey
and the initiation of any Proposed Action, then another complete inventory will be
required prior to any surface disturbing activities.

Greater Sage-grouse

In order to protect greater sage-grouse and their habitat, prior to any construction between
March 15 and May 15, all sagebrush habitat within a two-mile radius of proposed
construction sites will be surveyed for the presence of sage-grouse leks. If sage-grouse leks
are located, surface disturbance will not occur within a two-mile radii buffer during the
breeding/nesting season (March 15 to June 15).

No permanent facilities will be allowed within 1,000 feet of any identified greater sage-
grouse leks.

Bald Eagle

In order to protect bald eagles and their habitat, the following will be implemented:

1. Temporary activities within 1.0 mile of nest sites will not occur during the breeding
season of January 1 to August 31, unless the nest has been surveyed and determined
to be unoccupied.

2. Temporary activities within 0.5 mile of winter roost areas, e.g., cottonwood galleries,
will not occur during the winter roost season of November 1 to March 31, unless the
area has been surveyed and determined to be unoccupied.

3. No permanent infrastructure will be placed within 1.0 mile of nest sites.

4. No permanent infrastructure will be placed within 0.5 mile of winter roost areas.
5. Contact UDWR for removal of carrion from roadways within bald eagle foraging range.
6. Avoid loss or disturbance to large cottonwood gallery riparian habitats
7. Utilize directional drilling to avoid direct impacts to large cottonwood gallery riparian habitats:
   a. When employing directional drilling techniques, ensure that drilling does not intercept or degrade alluvial aquifers
8. Re-vegetate with native species indigenous to the area and non-native species that are not likely to invade other areas, all areas of surface disturbance within riparian areas and/or adjacent uplands.

Livestock Grazing

No roads, pipelines, well pads or other gas facilities will be placed within a 660-feet (200-meter) distance of existing livestock facilities, such as corrals or watering facilities. If there is no means to avoid these facilities, mitigation to replace them will be implemented, as directed by the AO.

Paleontology

Because the entire Project Area has a high potential for producing fossil material, on-site paleontological surveys will be conducted before all ground disturbing activities (roads, pipelines, well sites, staging areas, etc.) The exceptions will be where Quaternary alluvium (Condition 3) is thick enough to cover condition 1 formations (Uinta and Duchesne River Formations). After the paleontologic surveys are completed, associated reports will be submitted to the SMA/AO for review and clearance. Should exceptional or scientifically important fossil resources be located, the AO will make site-specific recommendations for impact avoidance and/or paleontologic monitoring during construction. Methods of avoidance will include one or a combination of the following:

   o Re-location of the well site or re-routing of the access road/pipeline corridor away from the fossil resource
   o Directional drilling (where feasible) of the well
   o Elimination of the location from the overall development plan
   o If deemed appropriate by the SMA/AO a paleontologist will be on site during construction to monitor for any paleontological resources.
   o If any paleontological resources are uncovered during excavation activities, all such work will stop and the AO notified for further guidance and direction.
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B – Power Pole Schematics
C – Special Status Species
D – Project Figures and Maps
E – Transportation Plan
F – Endangered Species Act, Section 7 Consultation
1.0 PURPOSE AND NEED

1.1 INTRODUCTION

This Environmental Assessment (EA) has been prepared to analyze Kerr-McGee Oil and Gas Onshore LP’s (Kerr-McGee) proposal to develop oil and gas leases within the Bonanza Project Area on Bureau of Land Management (BLM) and State of Utah lands. The EA is a site-specific analysis of potential impacts that could result with implementation of the Proposed Action or alternatives to the Proposed Action. The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any “significant” impacts could result from the analyzed actions. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a Statement of “Finding of No Significant Impact” (FONSI). A FONSI is a document that briefly presents the reasons why implementation of the Proposed Action or alternative will not result in “significant” environmental impacts. If the decision maker determines that this project has “significant” impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record and FONSI would be prepared approving the selected alternative. The Decision Record associated with this EA will be neither the final review nor the final approval for all actions associated with this project. Although the Decision Record may approve the project’s natural gas development and general location, each project component involving surface disturbance to federal lands must be analyzed and approved on a site-specific basis by the BLM. The method used to evaluate each surface-disturbing activity is detailed in the Application for Permit to Drill (APD) and/or Right of Way (ROW) grant. Submission and approval of such applications would be required prior to any project construction.

1.2 BACKGROUND

Kerr-McGee has notified the BLM Vernal Field Office that it proposes to develop natural gas resources underlying oil and gas leases owned by Kerr-McGee within the Bonanza Area in Uintah County, Utah. It is Kerr-McGee’s intent to explore and develop all potentially productive subsurface formations underlying the land in the Project Area. The Proposed Action includes the development of 95 natural gas wells and associated infrastructure. Well development proposed in this EA would be on roughly 40-acre bottom hole spacing, largely within Township 10 South, Range 23 East. Conceptual locations for the proposed well pads and other surface facilities were determined with consideration of slope, topography, sensitive resources, and other surface characteristics of the Project Area. Total Project Area acreage is 12,698 acres.

The Bonanza Project Area boundary contains lands owned by the United States, the State of Utah, the Northern Ute Indian Tribe, and private parties. However, within this EA, drilling and completion of natural gas wells is proposed on federal and State lands only. Table 1-1 notes land ownership acreages within the Project Area. The general location of the Project Area is shown in Appendix D, Figure 1.
Within the Bonanza Project Area boundary there are approximately 197 approved, producing, or abandoned natural gas wells, 62 miles of existing road network and numerous aboveground and buried pipelines. In conjunction with this ongoing gas production there, are four existing compressor stations located in the SENW of section 7, T10S, R23E, the NESE of section 5 T10S, R23E, the NENE of section 11, T10S, R23E, the NWNW of section 12 T10S, R22E, and the NWSE of section 36 of T9S, R22E.

### Table 1-1. Surface Ownership in the Bonanza Project Area

<table>
<thead>
<tr>
<th>Surface Ownership</th>
<th>Acreage in the Bonanza Project Area</th>
<th>Percent Acreage Ownership</th>
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<tbody>
<tr>
<td>BLM</td>
<td>11,110 acres</td>
<td>87%</td>
</tr>
<tr>
<td>Private</td>
<td>147 acres</td>
<td>1%</td>
</tr>
<tr>
<td>State</td>
<td>1,386 acres</td>
<td>11%</td>
</tr>
<tr>
<td>Tribal</td>
<td>55 acres</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Total</td>
<td>12,698 acres</td>
<td>100%</td>
</tr>
</tbody>
</table>

BLM’s objective is to allow development of those lease rights held by Kerr-McGee in an environmentally sensitive manner. National mineral leasing policies, and the regulations by which they are enforced, recognize the statutory right of leaseholders to develop mineral resources to meet continuing national needs and economic demands as long as undue environmental degradation is not incurred. Increased development of oil and gas resources in an environmentally responsible manner is needed to satisfy the Federal Energy Policy (NEPDG 2001).

Development of oil and gas resources is consistent with the mission of the BLM. The Mineral Leasing Act of 1920 (MLA), as amended, provides that exploration and development of domestic oil and gas is in the best interest of the United States. The intent of the MLA and its implementing regulations are to allow, and essentially encourage, lessees or potential lessees to explore for oil and gas or other mineral reserves on federally-administered lands. The Federal Land Policy and Management Act of 1976 (FLPMA) mandates that the BLM manage public lands on the basis of multiple use [43 U.S.C. § 1701(a)(7)]. Minerals are identified as one of the principal uses of public lands in Section 103 of FLPMA [43 U.S.C. § 1702(c)]. The BLM is responsible for administering activities consistent with rights associated with valid existing leases. Under the MLA, the lessee shall have the right to use as much of the leased lands as is necessary to explore, develop, and dispose of the leased resource (43 CFR 3101.1-2). These rights must be permitted in a manner that assures adequate protection of other resource values (FLPMA).
1.0 - Purpose and Need

1.4 CONFORMANCE WITH BLM LAND USE PLANS

The management of BLM public lands and resources within the Project Area is directed and guided by the *Book Cliffs Resource Area Resource Management Plan (RMP)* and *Final Environmental Impact Statement (USDI-BLM 1984)* and *Book Cliffs Resource Area Record of Decision (USDI-BLM 1985)*. The Record of Decision (ROD) and Resource Management Plan (RMP) allow for processing of APDs and ROW grant applications in support of oil and gas leasing operations with the impacts of construction and operation activities (e.g., construction of roads, drilling of wells, operation of compressor stations, etc.) to be analyzed on a case-by-case basis. The management objective of the RMP for energy resources is to lease mineral resources and permit exploration and development, while protecting or mitigating for other resource values. Implementation of the Proposed Action would respond to this objective by allowing Kerr-McGee to develop natural gas resources in the Project Area, while minimizing or avoiding the potential effects of construction and operational activities on natural resources. Therefore, the Proposed Action and Alternative C would be in conformance with the RMP and ROD. Implementation of Alternative B would also be in conformance with the RMP and ROD, as gas development could be permitted on a case-by-case basis.

1.5 RELATION TO STATUTES, REGULATIONS, AND OTHER PLANS

This EA was prepared by the BLM in accordance with NEPA and in compliance with all applicable regulations and laws passed subsequently, including the President’s Council on Environmental Quality (CEQ) regulations and U.S. Department of the Interior requirements.

The Proposed Action and alternatives carried through in this assessment are consistent with the Uintah County General Plan (Uintah County 2005). The Uintah County Plan generally indicates support for development proposals in its emphasis of multiple-use public land management practices and its emphasis of responsible use and optimum utilization of public land resources. Within the Uintah County Plan, multiple-use is defined as including, but not limited to, the following historically and traditionally practiced resource uses: grazing, recreation, timber, mining, oil and gas development, agriculture, wildlife habitat, and water resources as they become available or as new technology allows.

There are no comprehensive State of Utah plans for the Bonanza Project Area. The State of Utah School and Institutional Trust Lands Administration (SITLA) has leased all of the State lands within the Bonanza Project Area for oil and gas production. Because the objectives of SITLA are to produce funding for the State school system, and because production on federal leases could lead to further interest in drilling State leases in the area, the Proposed Action is assumed to be consistent with the objectives of the State.

Tribal lands within the Bonanza Project Area are part of the Uintah and Ouray Indian Reservation, which is administered by the Bureau of Indian Affairs (BIA) - Uintah and Ouray Agency. No development is proposed on Tribal lands. Any future development proposals on Tribal land would be subject to the authority of the BIA and the Ute Indian Tribe.

In May 1997 the Utah BLM published *Standards for Rangeland Health and Guidelines for Grazing Management for BLM Lands in Utah*. These standards for rangeland (ecological) health were developed to ensure that various services, activities, and all renewable resources of the land
are environmentally sustainable, and that non-renewable resources are recovered in ways that ensure the long-term health of the land managed by the BLM.

These standards cover upland soils, riparian systems, plant and animal communities, threatened and endangered species, and water quality. The four standards describe the conditions needed to sustain public health on BLM-managed lands. Because a standard exists for these categories, they will be addressed in the impact analysis of the Proposed Action and No Action Alternative.

Consultation with Utah State Historic Preservation Officer and the thirteen (13) federally-recognized Native American Tribes having traditional ties to the Uinta Basin will occur on a site-specific basis, as necessary, in association with the review of the Application for Permit to Drill, sundry notice, or Right-of-Way application.

1.6 IDENTIFICATION OF ISSUES

Announcement of the Proposed Action was posted on the Environmental Notification Bulletin Board (ENBB) on September 8, 2006, which provides for notice of all BLM actions subject to NEPA occurring in each of the Utah field offices.

The BLM requires that the type and magnitude of potential impacts to the 14 Critical Elements of the Human Environment (CEHE) (Table 1-2) be addressed during the NEPA process (BLM 1988 and 2003), and are included within the Interdisciplinary Team Analysis Record, Appendix A.

### Table 1-2. Critical Elements of the Human Environment

<table>
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<td>Wastes (Hazardous or Solid)</td>
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<td>Water Quality (Drinking/Ground)</td>
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<td>Farmlands (Price or Unique)</td>
<td>Wetlands/Riparian Zones</td>
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<td>Floodplains</td>
<td>Wild and Scenic Rivers</td>
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<tr>
<td>Invasive, Non-native Species</td>
<td>Wilderness/Wilderness Study Areas</td>
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Several resources of concern, in addition to the CEHE listed above in Table 1-2, have been identified in the Interdisciplinary Team Analysis Record in Appendix A. Those elements which are identified in the checklist as “Not Impacted” (NI) by the Proposed Action or “Not Present” (NP) in the Project Area are not discussed further in the text of this EA. The elements or issues with a “Potential Impact” (PI) are considered further in this EA and are listed below.

1.6.1 AIR QUALITY

Potential Issue 1: Proposed compression could affect air quality.

Potential Issue 2: Fugitive dust, resulting from construction and traffic could affect air quality.

1.6.2 AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Potential Issue: The vistas of the nominated White River ACEC could be affected by the proposed development.
1.6.3 CULTURAL RESOURCES

Potential Issue 1: Surface disturbing activities could result in damage to or loss of cultural resources including sites, structures, objects, and areas having Native American Religious concerns.

Potential Issue 2: Development and operation activities would increase human presence and additional roads would increase motorized access in the Project Area could increase the level of vandalism and theft of cultural resources.

1.6.4 FLOODPLAINS

Potential Issue: Development is proposed within or nearby White River floodplains and therefore, the floodplains could be impacted.

1.6.5 INVASIVE, NON-NATIVE SPECIES

Potential Issue 1: The proposed development could introduce invasive and non-native species to the Project Area.

Potential Issue 2: The proposed development could contribute to an increase in density and occurrence of invasive and non-native species in and surrounding the Project Area.

1.6.6 THREATENED, ENDANGERED OR CANDIDATE PLANT SPECIES

Potential Issue 1: Surface disturbing activities could negatively affect individual plants and potential habitat of the Uinta Basin Hookless Cactus or Ute ladies-tresses.

Potential Issue 2: Any change in hydrology would affect Ute Ladies Tresses

1.6.7 THREATENED, ENDANGERED OR CANDIDATE ANIMAL SPECIES

Potential Issue 1: Impacts to the White River could negatively affect threatened and endangered fish and designated critical habitat, including water depletion, for the Colorado River Endangered Fish Species.

Potential Issue 2: The proposed development could affect nesting or wintering bald eagles and bald eagle habitat along the White River.

Potential Issue 3: The proposed development could affect suitable Mexican spotted owl habitat.

1.6.8 WATER QUALITY (SURFACE AND GROUND)

Potential Issue 1: Surface disturbing activities would result in the removal of or disturbance to Project Area vegetation and soils. Disturbance of soils could potentially lead to increased soil compaction, soil erosion and sediment yield. Sediments
could enter the White River, thereby affecting surface water quality and aquatic habitats.

Potential Issue 2: Construction and operation of wells, pipelines and associated facilities could potentially result in spills to the White River. Such spills have the potential to affect surface water quality and aquatic habitats.

Potential Issue 3: Water in any usable ground water zones in the Project Area could be affected by drilling activities.

1.6.9 WETLANDS/RIPARIAN ZONES

Potential Issue: Surface disturbing activities within or near the riparian zones of the White River could affect wetlands and riparian habitats directly and indirectly.

1.6.10 WILD AND SCENIC RIVERS

Potential Issue: Segments of the White River are eligible for suitability in the National Wild and Scenic River System.

1.6.11 LIVESTOCK GRAZING

Potential Issue 1: Construction-related activities could lead to the need for increased cattle guard maintenance and could potentially make control of livestock more difficult, as natural barriers may be removed.

Potential Issue 2: The addition of roads could lead to increased traffic and the use of roads by livestock, as travel routes.

Potential Issue 3: The increased roads and removal of natural barriers could potentially cause livestock to graze areas not allotted for use by them.

1.6.12 VEGETATION

Potential Issue: Surface disturbing activities would result in losses of native vegetation, thereby resulting in an associated loss of wildlife habitats, increased erosion and sediment yield, and the potential for invasive and non-native weed invasion.

1.6.13 FISH AND WILDLIFE INCLUDING SPECIAL STATUS WILDLIFE OTHER THAN USFWS CANDIDATE OR LISTED SPECIES (E.G., MIGRATORY BIRDS)

Potential Issue 1: Surface disturbing activities and surface occupancy by project facilities (well pads, pipelines, roads, powerlines, etc.) could result in the long-term loss of occupied and potential habitat for a variety of wildlife species, including, for example, pronghorn antelope, golden eagles, ferruginous hawks, burrowing owls, and other special status species.
Potential Issue 2: Surface disturbing activities could result in the temporary displacement of wildlife species from occupied habitats.

Potential Issues 3: The installation of powerlines would provide perching habitat for raptors, thereby increasing potential for predation on prairie dogs and other species. Improperly designed powerlines could increase the risk of electrocution of raptors and other perching species.

1.6.14 SOILS

Potential Issue: Surface disturbing activities could lead to increased sediment and salinity in the White River.

1.6.15 RECREATION

Potential Issue: Surface disturbing activities could impact the recreation experience for river rafters, campers, and hikers utilizing the White River, Goblin City Overlook, Atchees Wash campsite, Atchees Draw and Saddletree Draw.

1.6.16 GEOLOGY/MINERAL RESOURCES/ENERGY PRODUCTION

Potential Issue: Proposed development could affect other authorized mineral activity in the Project Area.

1.6.17 VISUAL RESOURCES

Potential Issue: Surface disturbing activities would occur in Class II and Class IV Visual Resource Management areas.

1.6.18 PALEONTOLOGY

Potential Issue 1: Disturbance of soil and underlying bedrock could result in damage to or loss of fossil resources.

Potential Issue 2: Increased amount of access which increases the potential for vandalism and theft.

1.6.19 SOCIOECONOMICS

Potential Issue: The proposed natural gas development would result in the creation of short-term job opportunities during the construction, drilling, and development phase, and project-related taxes, royalties, and other revenues during the life of the project.

1.6.20 WILDERNESS CHARACTERISTICS

Potential Issue: Surface disturbing activities could potentially impact areas with wilderness characteristics.
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2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING THE PROPOSED ACTION

2.1 INTRODUCTION

This chapter presents the following alternatives which were developed for analysis in this EA:

- Alternative A - Proposed Action: This alternative outlines the action Kerr-McGee proposes to take in order to exercise valid lease rights and extract the leased natural gas from the subsurface in order to increase the available supply of natural gas by a daily delivery of gas.

- Alternative B - No Action Alternative: Analysis of this alternative provides a baseline for environmental impacts, and is required by CEQ regulations.

- Alternative C – Proposed Action with Additional Protection Measures: This alternative outlines actions in addition to the Proposed Action which would further minimize or eliminate impacts to sensitive resource values.

These alternatives are discussed in detail within this chapter. Three additional alternatives that were initially considered but eliminated from detailed analysis are also discussed in this chapter.

2.2 ALTERNATIVE A – PROPOSED ACTION

Under Alternative A, the Proposed Action, Kerr-McGee proposes to construct 95 natural gas wells and associated facilities, at the rate of approximately 30 wells per year over a four-year period. However, favorable economic conditions and evaluation of preliminary drilling results would determine the drilling timeframe as well as the total number of wells produced. Appendix D, Figure 1 illustrates proposed well pad locations as well as proposed locations for access roads, pipelines, and power lines. The primary components of the Proposed Action include:

- 95 wells and pads;

- approximately 43.6 miles of roads;

- approximately 77 miles of pipeline;

- two compressor sites and associated facilities which would total approximately 16,080-horsepower of new compression;

- approximately 20 miles of electrical power line and one electrical sub-station; and

- a 14-acre evaporation pond on State land.

2.2.1 GENERAL PROJECT AREA DESCRIPTION

The Project Area boundaries include the proposed wells and access roads, as well as two 200-foot wide rights of way (for powerlines and buried pipelines). One ROW would contain the proposed pipeline running northwest to Kerr-McGee’s Bridge site (Section 17, T9S, R22E). The second
ROW would contain the proposed power lines running north to Kerr-McGee’s Chapita plant then northeast to the Deseret Generation and Transmission power plant in Section 36, T8S, R23E. The Project Area is located in Uintah County with well development proposed largely within Township 10 South, Range 23 East. Total Project Area acreage is 12,698 acres.

2.2.2 PROPOSED ACTION CONSTRUCTION COMPONENTS

Kerr-McGee would adhere to existing construction and operations guidelines set out in the *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development – the Gold Book*, (2006) and current avian protection documents. Specific examples of the guidelines are stated in this Proposed Action as needed for clarity. Additional guidelines and/or management practices would be considered at the time of the site-specific on-site inspection. Any such additional guidelines and practices deemed appropriate for the proposed site-specific project would be included as conditions of approval or stipulations in the subsequent authorization documents.

2.2.2.1 Well Pads

The conceptual locations for the proposed well pads illustrated on Figure 1, Appendix D, were sited with consideration of slope, topography, sensitive resources, and other surface characteristics. The exact location of each well pad (and associated facilities) would be determined during the on-site, APD and ROW granting process. Initially, each well pad would be constructed to approximately 2.5 acres in size. During the planned four-year drilling and construction phase, the 95 well pads would occupy approximately 238 acres or 1.9% of the 12,698-acre surface area in the field. Following drilling and completion each well pad would be reduced in size to about a 1-acre production pad. The production pads would occupy a total of approximately 95 acres (or 0.7% of the surface area in the field) for the life of the project. The remaining 141 acres of disturbance due to well pad construction would be reclaimed according to SMA specifications.

Each completed production well pad would contain a flowing well head, a production separator, two 300-bbl tanks to contain water and condensate, and a metering station. The area used for mud tanks, generators, mud storage and fuel tanks would be constructed to have a slight slope (1%). If not possible, alternatives would include ditching to ensure surface drainage from work area to the reserve pit.

Guidance for the surveying and staking, construction and maintenance of wells as set out in Chapters 3 and 4 of the Gold Book would be considered and applied on a site-specific basis. Examples of this guidance include:

- Well site layout would consider geologic target, technical, economic, and operational feasibility, spacing rules, natural resource concerns and safety.
- Select a level area.
- Avoid lands subject to severe erosion or mass soil movement.
- Avoid narrow ridges
- Set back from steep slopes.
• Use vegetation and topography would be used to effectively screen development activities in visually sensitive areas.

• In riparian areas, active 100-year floodplains or ephemeral washes prone to major flooding events acceptable mitigation measures would include: Prior to any surface disturbance, the SMA would be notified and an on-site inspection would be completed to determine appropriate site-specific measures to minimize/eliminate possible leakage or spills into the drainage system. Containment structures, such as containment dikes, containment walls, drip pans, or equivalent protection actions, would be designed and maintained to ensure sufficient fluid containment around all qualifying bulk oil storage facilities, including tank batteries. The containment structure must have sufficient volume to contain the contents of the largest storage tank containing liquid hydrocarbons within the facility/battery and sufficient freeboard to contain precipitation, unless more stringent protective requirements are deemed necessary by the AO. Containment dikes would not be constructed with topsoil or coarse or insufficiently impervious spoil material. Containment would be required for produced water tanks.

• Suitable mufflers would be installed on all internal combustion engines and certain compressor components. Other noise reduction techniques would be considered such as the use of centralized tank batteries and placing other facilities off-site, and the use of remote well-monitoring systems to reduce vehicle traffic.

• Where excavation is not necessary for part of the well location, existing vegetation would be mowed or brush beat.

Development of the 95 proposed wells would be completed using vertical drilling methods. The standard drilling system for the wells would use water/fresh water based mud or KCL water/salt based mud. Ultimately, the decision on the type of fluid system to be employed would be made on a site-by-site basis through the APD process as each location is permitted.

Wells would utilize an open-loop circulation system with pits. Drilling fluids, including salts and chemicals, would be contained in the reserve pit. The pits would be constructed and operated as specified in the APD and would be fenced using fencing standards approved by the BLM.

Reserve pits would be fenced on three sides during drilling, and on the fourth side once drilling is completed. This fence would remain in place until the pit is reclaimed. The fence would be maintained until the pit is backfilled. In areas in or adjacent to habitat supporting avian species (e.g., raptors, migratory birds, etc.) flagging or netting over the pits would be used to prevent birds from flying into the reserve pits. Any hydrocarbons that enter the pits would be removed as soon as possible after drilling operations were completed. Upon termination of drilling and completions operations, the liquid contents of the reserve pit would be recycled for use at the next drill site or removed and disposed of at an approved waste disposal facility within 120 days after drilling is terminated.

Closed-loop drilling systems would be used in drainages, or areas of shallow ground water or porous soils over fractured bedrock aquifers, or when it is anticipated that pits would contain moderate to high levels of hydrocarbons and chloride.

To reduce risk to critical elements of the human environment or other resources, a Spill Prevention, Control and Countermeasure plan (SPCC) would be developed in accordance with 40 CFR 112. Further actions to reduce risk would include installation of leak detection systems, or
self-contained mud systems with the drilling fluids, and transportation of mud and cuttings to approved disposal areas. If any spills of oil, gas, salt water, or other fluids occur, Kerr-McGee would immediately contact the BLM and any other regulatory agencies necessary. Strict cleanup efforts would be initiated immediately. This would be true at all stages of the project including drilling, completion, operation, and abandonment of the well.

Any usable water zones encountered during drilling would be recorded by depth, properly protected, and reported to the appropriate agencies, including the Vernal Field Office. All water bearing zones and groundwater flows encountered while drilling would also be reported to the Vernal Field Office Geology and Engineering Team.

### 2.2.2 Access Roads

To service the proposed wells, approximately 43.6 miles of new road would be constructed. Of this, 24 miles of roads would be constructed independent of pipeline and 19.6 miles of road would be co-located with pipelines. New roads without co-located pipeline would be built on a 30-foot wide ROW. Construction within the 30-foot wide ROW would result in the disturbance of approximately 87 acres or 0.6% of the surface area in the field. Where new roads and surface pipelines are proposed together (co-located) the initial ROW for construction would be 50 feet wide. Construction within the 50-foot wide ROW (roads and pipeline) would result in the disturbance of approximately 119 acres or approximately 0.9% of the surface area in the Project Area. Upon completion of road construction and pipeline installation, the co-located road and pipeline ROWs would be reduced to a 30-foot width in order to accommodate the road travel surface, borrow ditches, and the surface area occupied by the pipeline. Successful reclamation of the remaining portion of the co-located ROW would reduce long-term surface disturbance to approximately 158 acres or 1.2% of the surface area in the field. However, the impact analyses within this EA will be conducted using the initial disturbance estimates. Site-specific approval of road ROWs would be obtained through the BLM ROW Grant Process and Uintah County as appropriate.

Existing County-maintained and Kerr-McGee-maintained roads within the Project Area would be used during construction and operational activities. These roads would include the Seven Sisters Road, a Class 1-B gravel road, and the North Atchees Wash Road, a Class D un-maintained county road. A transportation plan identifying the existing road network, proposed modifications to the roads, applicant-committed measures, and Gold Book standards and guidelines was developed for this project (See Appendix E).

Examples of guidance set out in Chapter 4 of the Gold Book that would be considered on a site-specific basis relative to new access roads include the following:

- New roads would be constructed to an appropriate standard no higher than necessary to accommodate the intended use.

- The AO would determine whether professional engineering design and construction oversight is needed. The need for professional design and oversight should be based on factors such as topography, soils, hydrology, and safety.

- To maximize visibility of both coming and going traffic and to maintain user speed turnouts would be constructed on all single lane roads on all blind curves and as needed along ridges. On roads open to the public, turnouts must be located at 1,000-foot
intervals or be mutually visible, whichever is less. Typical turnout dimensions would be 150' long x 30' wide.

- Well-access routes and non-thoroughfares routes would be designed for speeds between 10 to 30 miles an hour. Post speed limit signs on these roads as appropriate.

- Posted speeds for county-maintained roads and thoroughfares in the Project Area would be confirmed with county road department. Sufficient posted speed limits signs would be requested as appropriate.

- Natural topographic contours would be maximized, fitting as closely as possible to the natural terrain. Consideration would be given to vehicle operational limitations, soil types, environmental constraints and traffic service levels. Gradients would not exceed 8%, except for pitch grades of 300 feet or less; or 16% in dissected or mountainous terrain (unless prior approval is provided from the SMA).

- Drainage over the entire road would be controlled by the best combination of drainage dips, in- and out-sloping, crowning, natural rolling topography, ditch turnouts, low-water crossings, ditches, and culverts. Ditch grades should be no less than 0.5% to provide positive drainage and avoid siltation.

- Where topography allows, crossing at streams and ephemeral drainages prone to flooding would be designed at right angles to the streambed and in a manner ensuring bank stability.

- Culvert and/or drainage crossings would be designed to accommodate a 25-year or greater storm frequency without development of a static head at the pipe’s inlet. Any new culverts would undamaged and made of corrugated metal pipe. Culverts would be laid on natural ground or at the original elevation of any drainage crossed and have a minimum diameter of 18 inches (considering slope, soils, area being drained, precipitation and likelihood of storm events) and extend at least 1 foot beyond the toe of any slope. Rip-rap or other energy-dissipating devises would be placed at the outlet end of the culvert.

- Gravel or other surfacing would be used for “soft” road sections, steep grades, highly erosion soils, clay soils or where all-weather access is needed.

- Water or magnesium-chloride would be applied daily, where needed, to suppress fugitive dust.

- Successful interim and eventual final reclamation would be maximized. In the interim, road ditches and cut and fill slopes would be revegetated. Salvage of topsoil would be a priority where available during road construction. Topsoil would be spread to the greatest degree practical on cut slopes, fill slopes and borrow ditches prior to seeding. On freshly topsoiled slopes, hydromulch or other sediment-control measures would be applied where appropriate.

- Construction and/or maintenance activities associated with access routes would not occur on frozen or saturated soils when driving on such would result in surface ruts greater than 4 inches along straight travel routes.
Existing cattleguards would be regularly monitored and maintained in a safe, working order. This would include removing debris and sediment from the catchment pit beneath the cattleguard and off the existing roadway, repairing or replacing broken wings, braces, or bars on the cattleguard itself to ensure safe vehicle passage and maintain control of livestock movement in the area.

2.2.2.3 Pipelines

Kerr-McGee plans to install a total of approximately 77.4 miles of steel pipeline to transport the natural gas to market. The proposed pipelines would consist of both surface and buried lines as shown below in Table 2-1.

<table>
<thead>
<tr>
<th>Outer Diameter (in inches)</th>
<th>Estimated Total Length (in miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>23.2</td>
</tr>
<tr>
<td>6</td>
<td>8.9</td>
</tr>
<tr>
<td>8</td>
<td>8.9</td>
</tr>
<tr>
<td>10</td>
<td>1.6</td>
</tr>
<tr>
<td>Subtotal (Surface)</td>
<td>42.6</td>
</tr>
<tr>
<td>Buried</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>10.1</td>
</tr>
<tr>
<td>16</td>
<td>1.7</td>
</tr>
<tr>
<td>20</td>
<td>15.2</td>
</tr>
<tr>
<td>24</td>
<td>7.8</td>
</tr>
<tr>
<td>Subtotal (Buried)</td>
<td>34.8</td>
</tr>
<tr>
<td>Estimated Total</td>
<td>77.4</td>
</tr>
</tbody>
</table>

The proposed 24-inch outer diameter (OD) pipeline extending west to Kerr-McGee’s Bridge site is necessary to provide transport of gas from the Bonanza Project Area to the Questar Mainline 40 (ML40) and CIG Uinta Basin Lateral (155A) sales lines.

Surface pipelines installed along existing roads would initially require the use of a 10-foot wide construction ROW, which would be almost completely reclaimed following installation (with the exception of the surface area occupied by surface pipelines). Buried pipelines along existing roads would initially require the use of a 45-wide ROW for pipeline installation, which would be reclaimed to a 20-foot wide working ROW following pipeline construction.

Surface pipelines co-located with proposed roads would initially require the use of a 50-foot wide ROW for construction and installation. Following the completion of the co-located roads and pipelines, the ROW would be reduced to 30-feet wide in order to accommodate the road running surface, borrow ditches, and surface occupied by the actual pipeline.

Installation of surface cross-country pipelines would initially require the use of a 30-foot wide ROW. Buried cross-country pipelines would initially require the use of a 75-foot wide ROW. Assuming interim reclamation efforts are successful, cross-country pipeline ROWs would be almost completely reclaimed following installation (with the exception of the surface area occupied by surface pipelines).
Initial (short-term) and long-term disturbance estimates from pipeline construction are included in Table 2-2 below. The impact analyses within this EA will be conducted using the initial disturbance estimates. Where buried pipeline is proposed, ROWs are larger due to the need for trenching and placement of removed dirt and rock.

### Table 2-2. Surface Disturbances Related to Proposed Pipeline

<table>
<thead>
<tr>
<th>Type of Pipeline</th>
<th>Length in Miles</th>
<th>Construction ROW Width</th>
<th>Total Initial (Short-Term) Disturbance Acreage</th>
<th>Total Long-Term Disturbance Acreage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Along existing Roads</td>
<td>12.9 miles</td>
<td>10 feet</td>
<td>15.6 acres</td>
<td>1.6 acres</td>
</tr>
<tr>
<td>Surface Along proposed Roads</td>
<td>19.6 miles</td>
<td>50 feet</td>
<td>118.8 acres</td>
<td>71.3 acres</td>
</tr>
<tr>
<td>Surface Cross-County</td>
<td>10.1 miles</td>
<td>30 feet</td>
<td>37.3 acres</td>
<td>1.3 acres</td>
</tr>
<tr>
<td><strong>Subtotal (surface)</strong></td>
<td><strong>42.6 miles</strong></td>
<td><strong>NA</strong></td>
<td><strong>171.7 acres</strong></td>
<td><strong>74.2 acres</strong></td>
</tr>
<tr>
<td>Buried Along existing Roads</td>
<td>21.8 miles</td>
<td>45 feet</td>
<td>118.9 acres</td>
<td>52.8 acres</td>
</tr>
<tr>
<td>Buried Cross-County</td>
<td>13.0 miles</td>
<td>75 feet</td>
<td>118.2 acres</td>
<td>1.7 acres</td>
</tr>
<tr>
<td><strong>Subtotal (buried)</strong></td>
<td><strong>34.8 miles</strong></td>
<td><strong>NA</strong></td>
<td><strong>237.1 acres</strong></td>
<td><strong>54.5 acres</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>77.4 miles</strong></td>
<td><strong>NA</strong></td>
<td><strong>408.8 acres</strong></td>
<td><strong>128.7 acres</strong></td>
</tr>
</tbody>
</table>

1 Slight discrepancies may occur due to rounding.
2 For disclosure purposes, the approximately 119 acres of disturbance resulting from the road and pipeline ROW are discussed here and in Section 2.2.2.2, it is only included once in Table 2-3.

The pipelines would be constructed of steel and would range from 4.5-inch outer diameter (OD) pipeline to 24-inch OD pipeline (Figure 1 in Appendix D); portions of the pipeline greater than 10-inch OD and the entire 24-inch OD pipeline would be high-pressure. Pipeline 10-inches (OD) and smaller would be placed above ground, but would be safely buried at least 5 feet beneath existing roadways. Pipeline of 12 inches or more OD would be buried.

To ensure safe operation of the proposed pipelines, the system would be designed to operate at a maximum allowable working pressure (MAWP) of 740 pounds per square inch gauge (psig) for the low-pressure line and 1,123 psig for the high-pressure line. Normal operating pressures of the two systems would be 50-100 psig for the low pressure line and 900-1000 psig for the high-pressure line. The proposed 24-inch OD pipeline extending west to Kerr-McGee’s Bridge Station site would be constructed of high-strength X-65, 0.375 wall pipe, with a minimum ultimate strength of 2031 psig and a MAWP of 1219 psig. This section of pipe would be operating at a maximum of 60% of ultimate strength. All pipelines would be hydrostatically tested for integrity verification.

Testing of the pipelines would involve filling the entire length of pipe with water and pressurized to a minimum of 1.5 times the designated operating pressure, or 93% of the specified minimum yield strength of the pipe, for 8 hours to verify its integrity. Test water would be obtained from commercial water sources. An estimated total of about 71,404 barrels, or 8.9 acre feet, of water would be needed to fill the entire pipelines for testing. After testing, the water used would be tested and processed to ensure it meets applicable water quality standards prior to disposal. BLM
would approve the water testing and methods/approval to discharge the water near the source of testing. To prevent scouring and erosion, water meeting discharge standards would be discharged into energy dissipation devices, filter bags or certified weed-free straw bale dewatering structures. Upon discharge, these devises would be removed and properly disposed. If water is not acceptable, it would be placed in tanks or other suitable containers and disposed of at a pre-approved treatment facility.

Equipment needed to construct and lay the pipeline would include trucks and flat bed trailers for stringing, a bending machine, welding rigs, sidebooms, trenchers and/or backhoes, and pick-up trucks. This equipment may be present on Project Area roads as each step of the construction process is completed. Vehicle traffic during the construction phase would include the transportation of the well pad materials, pipeline and heavy equipment, the daily commuting of the workforce, and the daily operation of the construction equipment.

Surface pipeline segments would be welded or zaplocked together on disturbed areas in or near the location, whenever possible, and dragged into place. Along existing roads, a side-boom would be used to drag and lay the pipeline.

For buried pipeline a trench would be mechanically cut and excavated with trenching equipment, such as a backhoe or trencher. The width of the trench would range from 18 - 36 inches. The trench would be constructed to a depth that would maintain 36 inches of normal soil cover or 24 inches of cover in consolidated rock. Large debris and rocks removed from the earth during trenching and blasting that could not be returned to the trench would be hauled from the Project Area to an appropriate disposal facility. Buried sections of pipeline would be welded together on disturbed areas and lowered into the excavated trench. Backfill material would be segregated to pad the pipe to protect the coating.

Kerr-McGee would adhere to existing federal Onshore orders and industry standards for pipelines, for example as set out in API 1104 “Welding of Pipelines and Related Facilities” (1999), as updated, including Onshore Oil and Gas Order No. 2, which States: “…proposed casing and cementing programs shall be conducted as approved to protect and/or isolate all usable water zones, potentially productive zones. Any isolating medium other than cement shall receive approval prior to use.”

Pipeline design and placement guidelines, as set out in Chapter 4 of the Gold Book, would be considered on a site-specific basis. These guidelines include the following:

- Surface or buried pipelines less than 12” OD would parallel roads to the maximum extent possible. The proposed 24” buried line would also parallel existing roads.

- Pipeline placement would avoid steep hillsides to the extent practical. Should it be necessary to place a surface pipeline on a steep hillside, it would be anchored in place to avoid possible slippage.

- Pipelines would not be placed so as to block, dam or change the natural course of any drainage.

- Surface pipeline would be buried at all road crossings to a depth of 5 feet.
• At intervals of every 0.25 mile along surface pipelines an 8-foot wide dirt ramp would be constructed to allow for cross-country access by emergency vehicles (e.g., fire-fighting, law-enforcement, medical, search and rescue).

• After testing, all trenches would be compacted during backfilling operations.

• Cut and fill slopes would be regraded to conform to adjacent terrain and reclaimed

### 2.2.2.4 Compression and Dehydration

Under the Proposed Action, a total of approximately 32,000 hp of new compression would be installed in order to deliver gas from the proposed wells into the Greater Natural Buttes Processing Plant for downstream deliveries to WIC, Questar, NWPL, and CIG interstate pipelines outlets. Of the proposed compressors, 24,000 hp would be electric–powered and 8000 hp would be gas fired. All of the compression horsepower, except for two 1340 hp gas driven units, would be installed at new station locations on State surface in Section 12 of T10S, R22E (White River Compressor Station) and Section 2 of T10S, R23E (Diablo Compressor Station). Construction of the two compressor stations would require the disturbance of up to 22 acres at each location.

Dehydrator throughput would be approximately 70 million standard cubic feet per day (MMscfd) at each dehydrator unit with one unit located at Diablo Station and two units located at White River Station for a total capacity of 210 MMscfd.

Surface disturbance at the two proposed compression station locations would total approximately 44 acres.

### 2.2.2.5 Electrical Utilities

Under the Proposed Action, the majority of new compressor drivers at the Diablo and White River Compressor Stations would be electrically powered. Electricity for the proposed compressor engines would be routed on wooden poles from the Chapita substation to the compressor stations. Where feasible and in compliance with BLM Best Management Practices for Fluid Minerals (BLM 2006), power lines to the new compressor stations would be located along existing roads where practical.

The design and installation of new electrical facilities, as well as the operation and maintenance of existing facilities, would prevent electrocutions (refer to Appendix B for schematic drawings of power lines). Accepted construction standards for both new and any retrofit techniques would be used as set out in the Edison Electric Institute’s Avian Power Line Interaction Committee’s (APLIC) Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996 and Mitigating Bird Collisions with Power Lines: The State of the Art in 1994, or the most current editions. The operator may choose to develop their own internal construction standards that meet or exceed these guidelines; however, any such standards would be reviewed and approved by the appropriate SMA for any construction and installation. A summary of these standards include the following:

• To prevent electrocutions, there must be a conductor separation of 60 inches between energized conductors and grounded hardware, or cover energized parts and hardware if such spacing is not possible.
When possible, power lines would avoid areas where birds concentrate (e.g., wetlands, stream crossings, roosts, nesting colonies, historic staging areas) and take advantage of existing vegetation or topography that naturally shield birds from colliding with wires (e.g., placement next to cliffs or trees). Where this is not possible, line-visibility enhancement devices such as marker balls or bird diverters would be installed to reduce risk of collision on new or existing lines.

Raptor perch guards would be installed on power poles in or within 0.25 miles of sensitive wildlife habitat areas such as sage grouse leks or nesting areas and white-tailed prairie dog colonies.

Construction of artificial nest/perching platforms would be considered and designed on a site-specific basis to further reduce raptor predation in sage grouse nesting areas and/or white-tailed prairie dog colonies.

Power lines would be regularly monitored to detect possible “problem poles”. A problem pole is one where there has been a documented avian collision, electrocution, problem nest material buildup or where there is a high risk of an avian mortality. Remedial actions may include covering jumper wires, conductors and equipment; discouraging perching in unsafe areas; reframing; or, replacing a structure.

Power Lines

Proposed power lines would run from the Deseret Generation and Transmission power plant (Section 35, T8S, R23E) in a southwest direction to Kerr-McGee’s Chapita Compressor Station (Section 15 of T9S, R22E) and would branch from that location in two separate directions. The first branch would run to the southeast to the White River Compressor Station (Section 12 of T10S, R22E) continuing east into the Project Area and ending at the Diablo Compressor Station (Section 2 of T10S, R23E). The second branch would run west to the existing Bridge Station Site (Section 17 of T9S, R22E), continuing to the west out of the Project Area. Power lines running from the power plant to Kerr-McGee’s Chapita Compressor Station would include high-voltage transmission power lines (138,000 volts) that would be strung on double pole structures, allowing for 700-foot typical spans between the structures. Lower voltage distribution lines, running from the Chapita Compressor Station to the White River Station (terminating at the Diablo Compressor Station) and Bridge Station Site, would be strung on single poles.

A total of approximately 20 miles of aboveground power lines and associated two-track for powerline maintenance would be constructed; 6 miles would follow existing roads and 14 miles would be across open land (i.e. cross-country). Total long-term surface disturbance related to the power line ROW would be approximately 131 acres or 1.1% of the Project Area surface. Table 2-3 below provides a summary of surface disturbance related to power line construction.

High-voltage power lines would be constructed within 100-foot ROWs along existing roads and across open land using tracked and wheeled equipment. Low-voltage lines would be constructed within 40-foot ROWs near existing roads and within 40-foot ROWs across open land. The pole structures would be located a minimum of 20 feet from the road edge. The electrical substation transformers would be built on concrete foundations with secondary containment for oil-filled transformers and would be fenced with grounding on the perimeter. The substation would occupy the 2-acre location for the life of the project. To the extent practical, power poles would be located off narrow ridges and set back from steep slopes.
Table 2-3. Surface Disturbance Related to Power Line Construction

<table>
<thead>
<tr>
<th>Proposed Power Lines along Existing Roads</th>
<th>Initial (Short-term)</th>
<th>Long-term</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ROW Width (feet)</td>
<td>Length (miles)</td>
</tr>
<tr>
<td>Power lines (from Power Plant to Chapita)</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Power lines (from Chapita to the White River and Diablo Compressor Stations)</td>
<td>40</td>
<td>6.03</td>
</tr>
<tr>
<td><strong>Subtotal Disturbance for Power lines along Existing Roads</strong></td>
<td><strong>NA</strong></td>
<td><strong>6.03</strong></td>
</tr>
<tr>
<td>Proposed Cross-Country Power Lines</td>
<td>ROW Width (feet)</td>
<td>Length (miles)</td>
</tr>
<tr>
<td>Power lines (from Chapita to Power Plant)</td>
<td>100</td>
<td>8.38</td>
</tr>
<tr>
<td>Power lines (from Chapita to the White River and Diablo Compressor Stations)</td>
<td>40</td>
<td>5.91</td>
</tr>
<tr>
<td><strong>Subtotal Disturbance for Power lines Cross Country</strong></td>
<td><strong>NA</strong></td>
<td><strong>14.29</strong></td>
</tr>
<tr>
<td><strong>TOTAL DISTURBANCE: POWER LINES</strong></td>
<td><strong>NA</strong></td>
<td><strong>20.32</strong></td>
</tr>
</tbody>
</table>

Prior to installation, Kerr-McGee would survey and stake the exact line routes and would then build and string the lines. For the installation of 138,000 volt lines, 80-foot tall poles would typically be required every 700 feet for the length of the power lines. For the installation of 35,000 volt lines, 40-foot tall poles would typically be located every 175-200 feet. Once the poles are in place, the conductor would be strung. A sock line would be laid along the route by light vehicle or by hand. Ground crews would place the sock line in pulleys on each structure at the insulator location. The conductor would then be pulled by pulleys through the insulator with the assistance of a reel truck, or by hand, before moving to the next pole location.

Rocky Mountain Power would design and inspect the high-voltage line and would assume eventual ownership and maintenance of the 138,000 volt transmission power line after Kerr-McGee’s construction is completed. The lower voltage distribution lines would be designed, constructed, and operated by Kerr-McGee. The ownership change for these lines would occur where the 138,000 volt transmission power lines enter Kerr-McGee’s Chapita electrical
substation, so all distribution voltage lines extending from the Chapita Station would belong to Kerr-McGee.

High-voltage line ROWs would be reclaimed throughout the ROW with the exception of a two-track road that would be used for maintenance for the life of the project. However for the purposes of calculating long-term surface disturbance reclamation for this EA, the ROW would remain 100 feet in accordance with Utah Power requirements. Surface disturbance along the low-voltage power line ROWs would be reclaimed to a 10-foot width along existing roads and 30-foot width on open land.

**Compressor Stations**

To aid in distributing power to the proposed compressor engines, an electrical substation would be constructed on a two-acre location at the existing Chapita Compressor Station. The Chapita Compressor Station would transform voltage from 138,000 volts to 35,000 volts. The White River and Diablo Compressor Stations would be equipped with transformers at the front of the compressor stations reducing voltage from 35,000 volts to 4,160 volts for use by the compressor motors. The substation would consist of pad mount transformers, steel column installed instrument transformers (PTs/CTs), aerial disconnect switches, switch gear, a power distribution center (PDC) building and steel dead end structures. The substation would be located at the end of the 138,000 volt power line in Section 15 of T9S, R22E.

### 2.2.3 PROJECT AREA MAINTENANCE

Trash containers and portable toilets would be located on construction sites during well pad and pipeline installation. Toilet holding tanks would be regularly pumped and their contents disposed of at Vernal, Utah’s municipal sewage facility in accordance with applicable rules and regulations regarding sewage treatment and disposal. Garbage, trash, and other waste material would be collected in a portable, self-contained, fully enclosed trash cage during operations. Trash would not be burned on location. The collected material would be hauled to an approved landfill. No potentially harmful materials or substances would be left on the ROWs or in the vicinity. All debris and other waste material not contained in the trash cage would be cleaned up and removed from the location immediately after removal of the drill rig. The collected material would be hauled to an approved facility.

### 2.2.4 DRILLING OPERATIONS

Drilling operations would be conducted in compliance with all Federal Oil and Gas Onshore Orders, all Utah Division of Oil, Gas, and Mining (UDOGM) rules and regulations, and all applicable local rules and regulations. Kerr-McGee anticipates that one to two drilling rigs would be operating at any given time in the Bonanza Area to achieve its production objectives.

Following construction of the access road and well pad, a mobile drilling rig would be transported to the well site (along with other necessary equipment) and would be erected on the well pad. Drilling would commence with the spudding of a well. Drilling operations would generally include: adding new joints of pipe at the surface as the hole deepens; circulating drilling mud to cool the drill bit and remove the cuttings; removing the drill string from the hole to replace worn drill bits; and setting production casing and cementing it in place.

After the completion of drilling operations, any well with producing formations would be logged and production casing would be run and cemented in accordance with the drilling program.
approved in the APD. This would isolate all formations in the hole and would effectively eliminate communication between hydrocarbon bearing zones and water aquifers or other mineral resources.

2.2.5 COMPLETION OPERATIONS

Once a well is drilled and production casing is set, a completion unit would move on site to begin completion operations. The casing would be perforated and hydraulically fractured in potentially productive zones down hole, production tubing would be run, and the well would be tested for initial production rates.

2.2.6 WATER REQUIREMENTS

Major water requirements would consist of water needed for hydrostatic testing of all pipelines, drilling and completion of each well, and dust abatement. Kerr-McGee has stated that water for drilling, completion and dust abatement would be obtained from Dalbo, RNI Target, and/or John Busch. The companies obtain their water from the White River through approved permits. Typically, water use would be approximately 2 acre-feet per well, or an estimated total of 190 acre-feet, for drilling and completion. A total of about 8.9 acre-feet of fresh water would be involved with pipeline testing. Kerr-McGee estimates about 0.1 acre-feet per well, or an estimated total of about 9.5 acre-feet, would be needed for dust abatement. Total water use for drilling, completion, pipeline testing, and dust abatement would be approximately 208.4 acre-feet.

2.2.7 OPERATION AND MAINTENANCE OF WELLS

Well production equipment would be installed on the location if a well is successfully completed. Equipment needed to produce the well would include a wellhead, valves, piping, and a combination separator/gas meter that would be housed in a small building on each location. Initially, the gas that is produced would be transported via pipeline to one of four existing central compressor stations located in or near the Project Area. The proposed compressor stations would provide compression and dehydration for gas from the Bonanza wells following construction completion.

An evaporation pond is proposed on State land in Section 2, T10S:R23E. The pond would be used to dispose produced water from both existing and proposed wells in the Bonanza area. The pond would be constructed in accordance with appropriate regulations of UDOGM, the Utah Division of Water Rights, and Utah School and Institutional Lands Trust (SITLA). Construction of the Bonanza evaporation pond would result in the surface disturbance of approximately 14 acres. As determined necessary by UDOGM, the evaporation pond complex would be netted or flagged.

Surface pipeline integrity would be visually inspected by Kerr-McGee or contract personnel on a regular basis.

Kerr-McGee would install remote monitoring to measure production on gas and oil wells. At full development of the field, this monitoring would reduce trips to individual sites by pumpers to once every three days instead of daily trips.
2.2.8 WORKFORCE AND TIME REQUIREMENTS

The majority of the workforce requirement for the Proposed Action would be for construction, drilling, and completion activities. One to two drill rigs could be operating at any given month during the drilling program. Average, on-location workforce needs for drilling and completing an individual well would be 10 people, but could range from five to 50 people per well. During production, a minimal workforce would be required to operate and maintain the facilities.

2.2.9 WELL ABANDONMENT AND RECLAMATION

The life span of individual wells may vary; however, the typical life span of a well is estimated to be approximately 20 to 30 years. Abandonment of a well and its facilities would be performed in compliance with all applicable BLM and EPA regulations. All hydrocarbons and water-bearing horizons in an abandoned well bore would be isolated via cement plugs. At the time of final abandonment, all aboveground facilities, including pipelines, power lines, and power poles, would be removed. Underground pipelines would be purged and retired in place or physically removed at the time it is no longer needed.

Abandoned well pads, roads, and other disturbed areas would be reclaimed as near as practical to their original condition. This includes reestablishing soil conditions and ensuring revegetation of the disturbed areas to the specifications of the Surface Use Agency at the time of abandonment. All disturbed surfaces would be re-contoured to the approximate natural contours, with reclamation of the well pad and access road performed as soon as practical after final abandonment.

Dry holes would be plugged immediately after receiving authorization and plugging instructions from the BLM, Vernal Field Office. A “Subsequent Report of Abandonment”, Form 3160-5 would be filed with the Authorized Officer within 30 days following the completion of the well for abandonment. This report would indicate placement of the plugs and current status of the surface restoration.

The reclamation actions and measures would be incorporated to maximize successful site reclamation. Successful site reclamation (as set out in the Gold Book) will be defined as: When a self-sustaining, vigorous, diverse, native (or otherwise approved) plant community is established on site, with a density sufficient to control erosion and prevent noxious plant invasion, and to re-establish wildlife habitat or forage production. The SMA will determine the degree of success considering the following: a) the short-term stability, visual, hydrological and productivity objectives are achieved and that steps necessary to ensure long-term objectives will be reached through natural processes are in evidence and b) erosion control measures will be considered sufficient when adequate ground over is re-established, water naturally infiltrates into the soil; and, gullying, headcutting, slumping and deep or excessive rilling is not observed. Guidelines from Chapter 6 of the Gold Book include the following:

- Disturbed areas would be revegetated after the site has been satisfactorily prepared for reclamation. Preparation includes spreading topsoil to an adequate depth, may also include ripping, tilling, disking on contour, and dozer track-imprinting. Drilling on the contour whenever practical or by other approved methods such as dozer track-walking followed by broadcast seeding.

- Seeding or plant would be repeated until revegetation is successful.
• When conditions are not favorable for establishment of vegetation (e.g., drought conditions, insufficient salvaged topsoil), the SMA may allow for subsequent reseeding to be delayed until soil moisture conditions become favorable, or may require additional cultural techniques, such as mulching, hydromulching, drip-irrigating, fertilizing, fencing, or other practices.

• Site-specific reclamation actions would consider and correct site conditions detrimental to revegetation, such as heavy grazing pressure, insufficient salvaged topsoil, erosion potential and compacted or contaminated soil.

• Buried pipeline trenches would be compacted during backfilling and would be maintained to correct backfill settling and prevent erosion. Place and compact fill in the trench. For cut and fill slopes, replace topsoil and install temporary waterbars where necessary to control erosion and revegetating. Waterbars and other erosion control devices must be maintained and repaired as necessary.

2.2.9.1 Interim Reclamation

Reclaim all portions of site not needed for production operations. Portions of the well site not needed for operational and safety purposes are recontoured to a final or intermediate contour that blends with the surrounding topography as much as possible. A sufficient level area must remain for setup of a workover rig.

Salvaged topsoil should be spread over the area of interim reclamation, rather than stockpiled. Any topsoil piles set aside should be revegetated to prevent it from eroding and help maintain its biological viability.

2.2.9.2 Final Reclamation

Restore the area to its original landform, or a contour that blends with the surrounding landform.

All excavation and pits must be closed by backfilling when they are dry and free of waste and graded to conform to the surrounding terrain.

Water breaks and terracing should only be installed when absolutely necessary to prevent erosion of fill materials and should be removed with the site is successfully revegetated and stabilized.

Wherever possible, cut slopes, fill slopes and borrow ditches associated with roads should be covered with topsoil and revegetated. Final reclamation includes recontouring the road back to its original contour, seeding, controlling noxious weeds and may include other techniques to improve reclamation success such a ripping, scaring, replacing topsoil, placing waterbars, pitting, mulching, hydromulching, adding chemical additives to enhance soil composition, redistributing woody debris and signage or barricading for the short-term.

Reseeding would be completed with seed mixtures of native and non-aggressive, site-adapted introduced or naturalized plant species as recommended by the appropriate SMA. Reclamation practices would continue as needed, until such time as written approval is received from the BLM.

Kerr-McGee would work with the SMA to monitor the success of interim and final reclamation. Annual inspections on selected sites would be performed starting two years after initial
reclamation work. The two-year gap would allow seed to become established and would provide two full growing seasons prior to inspection, which would allow for a better measure of reclamation success.

2.2.10 PROJECT AREA DISTURBANCE SUMMARY

Initial (short-term) and long-term disturbances from construction activities are summarized below in Table 2-4. “Short-term” has been generally accepted and consistently expressed as the first approximately 5 years following initial disturbance and interim reclamation; “long-term” has been generally accepted and consistently expressed as longer than 5 years. The use of “short-term” and “long-term” is consistent with its usage in the draft Vernal RMP. Implementation of successful interim reclamation and revegetation practices should effectively reduce the initial, short-term disturbance resulting from the project, thus the long-term disturbance should be substantially less. However, for impact analyses in Chapter 4 of this EA, all surface disturbance and resulting direct and indirect impacts were analyzed using the initial (short-term) or maximum disturbance calculations listed in Table 2-4, below.

<table>
<thead>
<tr>
<th>Disturbance Source</th>
<th>Initial (Short-Term) Disturbance (0-5 Years)</th>
<th>Long- Term Disturbance (&gt;5 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Pads</td>
<td>238 acres 1.9% of Project Area</td>
<td>95 acres 0.7% of Project Area</td>
</tr>
<tr>
<td>Access Roads</td>
<td>130 acres 1.0% of Project Area</td>
<td>84 acres 0.7% of Project Area</td>
</tr>
<tr>
<td>(including those with co-located pipeline)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipelines</td>
<td>290 acres 2.3% of Project Area</td>
<td>129 acres 1.0% of Project Area</td>
</tr>
<tr>
<td>(excluding those co-located with proposed access roads)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power lines and Sub-station</td>
<td>161 acres 1.3% of Project Area</td>
<td>132 acres 1.1% of Project Area</td>
</tr>
<tr>
<td>Compression Stations</td>
<td>44 acres 0.3% of Project Area</td>
<td>44 acres 0.3% of Project Area</td>
</tr>
<tr>
<td>Evaporation Pond</td>
<td>14 acres 0.1% of Project Area</td>
<td>14 acres 0.1% of Project Area</td>
</tr>
<tr>
<td>Total Disturbance</td>
<td>877 acres 6.8% of the Project Area</td>
<td>498 acres 3.8% of the Project Area</td>
</tr>
</tbody>
</table>

2.2.11 APPLICANT-COMMITTED ENVIRONMENTAL PROTECTION MEASURES

The following list summarizes practices that would be implemented by Kerr-McGee under the Proposed Action to avoid or minimize negative effects on the natural resources in the Project Area.
2.2.11.1 Public Health and Safety

To minimize the possibility of fires during construction and operation, all equipment, including welding trucks, would be equipped with fire extinguishers.

No chemicals subject to reporting under SARA Title III in an amount equal to or greater than 10,000 pounds would be used, produced, stored, transported, or disposed of annually, nor would extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, be used, produced, stored, transported, or disposed in association with the drilling, testing or completing of the proposed wells.

Trash would be confined in a covered container and hauled to an approved landfill. Burning of waste, chemicals or hydrocarbons would not be done. Human waste would be contained and disposed of at an approved sewage treatment facility.

Vehicle traffic would be limited to existing roads and trails and approved ROWs.

Vehicles would travel at speeds within set speed limits of main access roads and at slower speeds appropriate for conditions on more remote roads and trails.

2.2.11.2 Air Quality

Members of the construction and drilling crew would be encouraged to car pool to and from surrounding cities and towns to minimize vehicle-related emissions.

As needed or determined necessary by the SMA AO, Kerr-McGee would apply water to project-related roads to reduce fugitive dust from vehicle traffic.

2.2.11.3 Cultural Resources

Kerr-McGee would instruct all employees or contractor supervisors that collection or intentional destruction of archaeological resources on the Project Area is illegal. Employees and contractor supervisors would also be instructed that vehicles and construction equipment must always remain on existing roads or along corridors/locations approved for surface disturbance. Such instruction would help prevent unintentional damage to cultural resources.

Prior to the construction process, a Class II and III cultural resources survey would be completed by an archaeologist acceptable to the AO on all areas proposed for surface disturbance. Should any significant cultural resources be located, the AO could implement avoidance strategies. Suggested avoidance strategies could include one or a combination of the following:

- Re-location of the well site or re-routing of the access road/pipeline corridor away from the cultural resource;
- Directional drilling (where feasible) of the well to avoid surface disturbance on a cultural resource;
- Elimination of the location from the overall development plan.

Clearance for each surface-disturbing project would be given by the SMA AO.
If deemed appropriate by the SMA, construction activities within specific portions of the pipeline and power line corridors would be monitored for the presence of cultural resources. Should any significant cultural resources be located, one or a combination of the above-outlined avoidance strategies would be implemented.

Should construction activities uncover cultural resources, all construction work would immediately cease and the AO contacted for further instruction.

2.2.11.4 Floodplains/Wetlands/Riparian Zones

- No development is planned in the White River floodplain, wetland or riparian zones. If however, site-specific on-sites determine that such resources would be involved, Utah BLM’s existing riparian policy would apply, i.e., no new surface disturbing activities would be allowed within 100 m (330 feet) of riparian areas, unless it can be shown that 1) there are no practical alternatives, 2) all long-term impacts can be fully mitigated, or 3) the activity will benefit or enhance the riparian area. (UT-IM-93-93).

- No refueling or lubricating would take place within 100 feet of wetlands and other water bodies or drainages.

- Hazardous materials, chemicals, fuels, etc., would not be stored within 100 feet of wetlands or surface waters.

2.2.11.5 Invasive and Noxious Weeds

To reduce the spread/introduction of noxious and invasive weed species via project-related vehicles and equipment into the Project Area, Kerr-McGee’s contractors entering the field from other areas would power-wash all construction equipment and vehicles prior to the start of construction.

Project employees and contractors would not be allowed to drive off-road (unless on approved ROWs).

Weed control on BLM land would be conducted through an approved Pesticide Use Proposal (PUP). Components of this proposal would include conducting annual spring baseline inventories to determine the location and extent of weeds species in areas proposed for development; identify follow-up treatments methods to effectively control identified weeds and outline subsequent monitoring to assess the effectiveness of treatment.

- To further minimize the introduction and/or spread of weeds, only certified weed-free erosion control and reclamation materials (i.e., straw bales and seed mixes) would be used.

2.2.11.6 Livestock Grazing

Employees and sub-contractors would be instructed to watch for grazing livestock during the period December 5 through April 30 to reduce potential of collisions with grazing livestock that may wander onto roads.
No roads, pipelines, well pads or other gas facilities would be placed within a 200-meter distance of existing livestock facilities, such as corrals or watering facilities. If there is no means to avoid these facilities, mitigation to replace them would be implemented, as directed by the AO.

Each existing fence to be crossed would be braced and tied off before cutting the wire. If the crossing is temporary, a wire gate would be installed until work is completed and then the fence immediately repaired. If the crossing is permanent, e.g., a road access, the braces would be at a minimum of 2-7/8 inches outside diameter (OD) steel pipe, in order to reduce the need for maintenance and to increase the life of the fence. The braces would consist of three posts and two top rail-braces. The brace posts would be cemented in the ground to a minimum depth of at least 3 feet and welded with a 2-7/8 inch top rail, with any open ends capped. The height of the brace posts would be 42 inches from the ground to the top of the brace. A 16-foot steel Powder-River-type gate would be welded to the fence brace post adjacent to the cattle guard.

Cattleguards would be installed on concrete bases and would meet AO standards.

2.2.11.7 Visual Resources

Kerr-McGee would paint tanks and other facilities to blend with their surroundings in accordance with the site-specific requirements that would be specified by the AO.

Kerr-McGee would avoid, where feasible, the placement of facilities and power poles on hill tops or along ridge lines in visually sensitive areas. If facilities could not be relocated off ridge lines or hill tops in visually sensitive areas, Kerr-McGee would consider the use of tanks with a smaller height as directed by SMA Authorized Officer.

2.2.11.8 Geology/Mineral Resources/Energy Production

Mining claim holders would be invited to participate in the on-site process for proposed site-specific projects that could involve current and/or pending mining claims.

The BLM would be notified if any solid minerals are contacted during construction of well pads and/or access roads.

2.2.11.9 Fire Management

All brush build-up around mufflers and other engine parts would be avoided; periodic checks would be conducted to prevent this build-up.

All personnel would be advised that campfires or uncontained fires of any kind are prohibited.

2.3 ALTERNATIVE B – NO ACTION

Under the No Action Alternative, the Proposed Action would not be implemented.

The No Action Alternative would result in no new development on BLM-administered public lands. The five proposed wells on State lands and/or involving State minerals would be developed; four wells in section 2, T9S, R23E and 1 well in section 16, T9S, R23E. BLM would provide reasonable access to these proposed wells in accordance with existing regulations. No
other development would be involved. Estimated total disturbance under the No Action Alternative would be approximately 12.5 acres.

2.4 ALTERNATIVE C – PROPOSED ACTION WITH ADDITIONAL PROTECTION MEASURES

This alternative would involve the complete Proposed Action, set out in section 2.2 above in its entirety, as well as the additional protection measures as set out below. These protection measures are designed to further minimize or eliminate potential impacts to these resources from energy development activities.

2.4.1 CULTURAL RESOURCES

If deemed appropriate by the SMA/AO, construction activities within specific portions of the buried pipeline and power line corridors would be monitored for the presence of buried cultural resources.

Should any significant cultural resource be located, all construction activities would immediately cease and the SMA/AO would be notified for additional guidance and direction.

2.4.2 THREATENED, ENDANGERED AND CANDIDATE SPECIES

Prior to any project-related surface disturbance, all locations proposed for surface disturbance would be examined by a wildlife biologist and botanist approved by the applicable SMA to determine if any federally threatened or endangered species are present. If present and prior to initiating any surface disturbance activities, the SMA and the FWS would implement appropriate avoidance measures.

2.4.2.1 Uinta Basin Hookless Cactus

In order to minimize effects to the federally threatened Uinta Basin hookless cactus, the Bureau of Land Management (BLM) in coordination with the U.S. Fish and Wildlife Service (Service), developed the following avoidance and minimization measures. Integration of and adherence to these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance) are in compliance with the Endangered Species Act (ESA). Kerr-McGee would adhere to the following avoidance and minimization measures:

1. Pre-project habitat assessments would be completed across 100 percent of the project disturbance area within potential habitat\(^1\) prior to any ground disturbing activities to determine if suitable Uinta Basin hookless cactus habitat is present.

2. Within suitable habitat\(^2\), site inventories would be done to determine occupancy.

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\(^1\) Potential habitat is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment.

\(^2\) Suitable habitat is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain Uinta Basin hookless cactus. Habitat descriptions can be found in the U.S. Fish and Wildlife Service’s 1990 Recovery Plan and Federal Register Notices for the Uinta Basin hookless cactus (http://www.fws.gov/endangered/wildlife.html).
Inventories:

a. Must be conducted by qualified individual(s),

b. Would be conducted in suitable and occupied\(^3\) habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected, and during appropriate flowering periods:

   i. *Sclerocactus brevispinus* surveys should be conducted March 15\(^{th}\) to June 30\(^{th}\), unless extended by the BLM

   ii. *Sclerocactus wetlandicus* surveys can be done any time of the year, provided there is no snow cover,

c. Would occur within 115 feet from the centerline of the proposed right-of-way for surface pipelines or roads; and within 100 feet from the perimeter of disturbance for the proposed well pad including the well pad,

d. Would include, but not be limited to, plant species lists and habitat characteristics, and

e. Would be valid until March 15\(^{th}\) the following year for *Sclerocactus brevispinus* and one year from the survey date for *Sclerocactus wetlandicus*.

3. Design project infrastructure to minimize impacts within suitable habitat:

   a. Reduce well pad size to the minimum needed, without compromising safety,

   b. Limit new access routes created by the project,

   c. Roads and utilities should share common right-of-ways where possible,

   d. Reduce width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,

   e. Place signing to limit off-road travel in sensitive areas,

   f. Stay on designated routes and other cleared/approved areas, and

   g. All disturbed areas would be re-vegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas.

4. Within occupied habitat, project infrastructure would be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:

   a. Follow the above (#3) recommendations for project design within suitable habitats,

   b. Buffers of 100 feet minimum between the edge of the ROW (roads and surface pipelines) or surface disturbance (well pads) and plants and populations would be incorporated,

   c. Surface pipelines would be laid such that a 100 foot buffer exists between the edge of the ROW and the plants, use stabilizing and anchoring techniques when the pipeline crosses the habitat to ensure the pipelines don’t move towards the population,

   d. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,

   e. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,

\(^{3}\) Occupied habitat is defined as areas currently or historically known to support Uinta Basin hookless cactus; synonymous with “known habitat.”
2.0 - Description of Alternatives, Including the Proposed Action

f. Designs would avoid concentrating water flows or sediments into occupied habitat,
g. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and
h. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.

5. Occupied Uinta Basin hookless cactus habitats within 100 feet of the edge of the surface pipelines’ right-of-ways, 100 feet of the edge of the roads’ right-of-ways, and 100 feet from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring would include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports would be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures would be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service.

6. Reinitiation of section 7 consultation with the Service would be sought immediately if any loss of plants or occupied habitat for the Uinta Basin hookless cactus occurs as a result of project activities.

7. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures would be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

8. No herbicide spraying would be allowed within 300 feet of Uinta Basin hookless cactus individuals. Any weed control work to be done in suitable and/or occupied habitat for this species would be completed by hand.

2.4.2.2 Black Footed Ferret

If construction would be planned in or near an active prairie dog complex in the future, BLM would identify the potential for the presence of black-footed ferrets during the APD on-site inspection. The proponent then shall notify BLM before construction is to begin, so BLM would determine whether any further monitoring would be necessary.

2.4.2.3 Colorado River Fish

Depending on the water year, larval fish may be present in the Green, Colorado, Gunnison, and Yampa Rivers from as early as April 1 to as late as August 31 (earlier in dry years; later in wet years)

1. To avoid entrainment, water should be pumped from an off-channel location – one that does not connect to the river during high spring flows. An infiltration gallery constructed in a BLM and Service approved location is best.
2. If the pump head is located in the river channel where larval fish are known to occur, the following measures apply:
   a. the pump would not be situated in a low-flow or no-flow area as these habitats tend to concentrate larval fishes;
b. the amount of pumping would be limited, to the greatest extent possible, during that
period of the year when larval fish may be present (see above); and
c. the amount of pumping would be limited, to the greatest extent possible; during the
pre-dawn hours as larval drift studies indicate that this is a period of greatest daily
activity.
3. All pump intakes would be screened with ¼” mesh material.
4. Any fish impinged on the intake screen would be reported to the Service (801.975.3330)
and the Utah Division of Wildlife Resources:

Northeastern Region
152 East 100 North, Vernal, UT 84078
Phone: (435) 781-9453

2.4.3 SPECIAL STATUS BIRD SPECIES, INCLUDING RAPTORS

2.4.3.1 Raptors

Prior to any construction between 1 January and 31 August, all precipitous areas and treed areas
within 0.5 mile of proposed construction sites would be surveyed for the presence of raptor nests.
If occupied raptor nests were found, construction, drilling and completion would not occur within
species-specific buffer radii during the species-specific active nesting season, unless topographic
or vegetative characteristics obscured visual and auditory impacts from the nest. If surveys
identify raptor nests in the Project Area, species-specific buffer radii and timing restrictions
(Table 2-5, below) would be applied as directed by the AO. No permanent facilities would be
constructed within 0.25 mile of the nest site.

Table. 2-5 Spatial and Timing Limitations for Active Raptor Nests (USDI-BLM 1994)

<table>
<thead>
<tr>
<th>Species</th>
<th>Spatial Buffer around Active Nest</th>
<th>Timing Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferruginous Hawk</td>
<td>0.5 mi</td>
<td>March 1 – July 15 No permanent structures constructed within</td>
</tr>
<tr>
<td></td>
<td>0.25 mi</td>
<td></td>
</tr>
<tr>
<td>Burrowing Owl</td>
<td>0.5 mi</td>
<td>April 1 – August 15</td>
</tr>
<tr>
<td>Osprey</td>
<td>0.5 mi</td>
<td>April 1 – July 15</td>
</tr>
<tr>
<td>Swainson’s Hawk</td>
<td>0.5 mi</td>
<td>April 1 – July 15</td>
</tr>
<tr>
<td>Northern Goshawk</td>
<td>0.5 mi</td>
<td>April 15 – August 20</td>
</tr>
<tr>
<td>Short-eared Owl</td>
<td>0.5 mi</td>
<td>April 10 – June 15</td>
</tr>
<tr>
<td>Prairie Falcon</td>
<td>0.5 mi</td>
<td>April 1 – July 15</td>
</tr>
<tr>
<td>Merlin</td>
<td>0.5 mi</td>
<td>April 15 – June 25</td>
</tr>
<tr>
<td>American Kestrel</td>
<td>0.5 mi</td>
<td>May 1 – June 30</td>
</tr>
<tr>
<td>Turkey Vulture</td>
<td>0.5 mi</td>
<td>May 15 – August 15</td>
</tr>
<tr>
<td>Cooper’s Hawk</td>
<td>0.5 mi</td>
<td>May 1 – August 15</td>
</tr>
</tbody>
</table>
2.0 - Description of Alternatives, Including the Proposed Action

<table>
<thead>
<tr>
<th>Species</th>
<th>Spatial Buffer around Active Nest</th>
<th>Timing Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sharp-shinned Hawk</td>
<td>0.5 mi</td>
<td>Jun 20 – August 15</td>
</tr>
<tr>
<td>Northern Harrier</td>
<td>0.5 mi</td>
<td>April 1 – July 15</td>
</tr>
<tr>
<td>Red-tailed Hawk</td>
<td>0.25 mi</td>
<td>April 1 – July 15</td>
</tr>
<tr>
<td>Great Horned Owl</td>
<td>0.25 mi</td>
<td>February 1 – May 15</td>
</tr>
<tr>
<td>Long-eared Owl</td>
<td>0.5 mi</td>
<td>March 15 – June 15</td>
</tr>
<tr>
<td>Mexican Spotted Owl</td>
<td>0.5 mi</td>
<td>March 1 – August 1</td>
</tr>
</tbody>
</table>

To minimize possible raptor:vehicle collisions in the greater Project Area, reports of carrion along roadways would be reported to UDWR and guidance obtained as to how to safely dispose of the carcass.

2.4.3.2 Mexican Spotted Owl

In order to protect Mexican spotted owl and their habitat the following survey and protection protocols would be put into effect: No surface disturbing activities would be allowed within “good” and “fair” habitat designations until the end of the two survey seasons in accordance with USFWS protocol. If MSO are documented, BLM would consequently follow USFWS protocol for Protected Activity Center (PAC) establishment. With the exception of canyon habitat, well pad construction and drilling would be allowed within the 0.5 mile buffer after the first season of surveys is completed, outside of the timing restriction and only if no owls have been detected. The second season of surveys would still be required for these 0.5 mile buffer areas. If no owls have been detected at the completion of the two seasons of calling surveys, the timing restriction shown in Table 2-5 above would no longer be required for the areas of “good” and “fair” habitat, or the 0.5 mile buffer. However, if more than four years have elapsed between the end of the two seasons of survey and the initiation of any Proposed Action, then another complete inventory would be required prior to any surface disturbing activities.

2.4.3.3 Greater Sage-grouse

In order to protect greater sage-grouse and their habitat, prior to any construction between March 15 and May 15, all sagebrush habitat within a two-mile radius of proposed construction sites would be surveyed for the presence of sage-grouse leks. If sage-grouse leks were located, surface disturbance would not occur within a two-mile radii buffer during the breeding/nesting season (March 15 to June 15). No permanent facilities would be allowed within 1,000 feet of any identified greater sage-grouse leks.

2.4.3.4 Bald Eagle

In order to protect bald eagles and their habitat, the following would be implemented:

1. Temporary activities within 1.0 mile of nest sites will not occur during the breeding season of January 1 to August 31, unless the area has been surveyed and determined to be unoccupied.
2. Temporary activities within 0.5 mile of winter roost areas, e.g., cottonwood galleries, will not occur during the winter roost season of November 1 to March 31, unless the area has been surveyed and determined to be unoccupied.

3. No permanent infrastructure will be placed within 1.0 mile of nest sites.

4. No permanent infrastructure will be placed within 0.5 mile of winter roost areas.

5. Contact UDWR for removal of carrion from roadways within bald eagle foraging range.

6. Avoid loss or disturbance to large cottonwood gallery riparian habitats.

7. Utilize directional drilling to avoid direct impacts to large cottonwood gallery riparian habitats:
   - a. When employing directional drilling techniques, ensure that drilling does not intercept or degrade alluvial aquifers.

8. Re-vegetate with native species indigenous to the area and non-native species that are not likely to invade other areas, all areas of surface disturbance within riparian areas and/or adjacent uplands.

2.4.4 LIVESTOCK GRAZING

No roads, pipelines, well pads or other gas facilities would be placed within a 660-feet (200-meter) distance of existing livestock facilities, such as corrals or watering facilities. If there is no means to avoid these facilities, mitigation to replace them would be implemented, as directed by the AO.

2.4.5 PALEONTOLOGY

Because the entire Project Area has a high potential for producing fossil material, on-site paleontological surveys would be conducted before all ground disturbing activities (roads, pipelines, well sites, staging areas, etc.) The exceptions would be where Quaternary alluvium (Condition 3) is thick enough to cover condition 1 formations (Uinta and Duchesne River Formations). After the paleontologic surveys are completed, associated reports would be submitted to the SMA/AO for review and clearance. Should exceptional or scientifically important fossil resources be located, the AO would make site-specific recommendations for impact avoidance and/or paleontologic monitoring during construction. Methods of avoidance would include one or a combination of the following:

- Re-location of the well site or re-routing of the access road/pipeline corridor away from the fossil resource.

- Directional drilling (where feasible) of the well.

- Elimination of the location from the overall development plan.

- If deemed appropriate by the SMA/AO a paleontologist would be on site during construction to monitor for any paleontological resources.

- If any paleontological resources are uncovered during excavation activities, all such work would stop and the AO notified for further guidance and direction.
2.5 ALTERNATIVES CONSIDERED, BUT ELIMINATED FROM FURTHER ANALYSIS

2.5.1 ALL PIPELINES PLACED ABOVE-GROUND

An alternative that would require all pipelines to be placed on the surface was initially considered. While this alternative would result in less surface disturbance within the Project Area (1 mile of surface line results in about 4.0 acres of disturbance, while 1 mile of buried line results in 6.8 acres of disturbance), the approximately 35 miles of high-pressure pipeline between 12 and 24-inches outer diameter placed on the surface would result in administrative access issues for BLM, Kerr-McGee, SITLA, and other permitted users of the Project Area, would potentially threaten public health and safety, and could affect migration and mobility of wildlife in the Project Area. Therefore, this alternative was eliminated from further analysis.

2.5.2 WELL SPACING ALTERNATIVES

Various lower well spacing patterns (e.g., 80-acre, 160-acre) were briefly considered during initial project design, however, the limited permeability of the Mesaverde and Wasatch formations in and adjacent to the Bonanza Project Area indicate that spacing lower than 40-acres would result in inadequate drainage of the targeted reservoirs and would not meet the purpose and need of the project. A higher well spacing pattern (i.e., 20-acre) was determined to not be necessary at this time in order to adequately drain natural gas resources of the Project Area. However, should higher spacing in-fill development someday be considered, such development would be required to undergo analysis under NEPA. Based on this information, an alternate density well spacing alternative was eliminated from further analysis.

2.5.3 DIRECTIONAL DRILLING ACROSS THE ENTIRE FIELD

Directional drilling in the Bonanza Project Area is generally considered technically feasible. However, Kerr-McGee considers full-scale development of the Bonanza Area utilizing directional drilling as impractical and detrimental to the optimal resource potential of the area for a number of specific reasons. Kerr-McGee has considered each of these directional drilling issues specifically in its resource development plan for the area. For the purpose of these comments, each of these issues is listed separately under two general categories. Category 1 issues are associated with the actual directional drilling operations. Category 2 issues are associated with ongoing production operations throughout the life of the directional well bores.

Category 1- Development Drilling Issues:

1) Directional drilling costs:

Directional well bores are more expensive to drill than vertical well bores. Incremental directional drilling costs are typically associated with a larger rig size, larger required well pads, added drilling rig days, and additional services and specialty tools associated with the drilling operations.
2) **Directional drilling risks:**

Deviated drilling creates technical challenges that may increase operational risks during drilling and/or completion of a given well. These risks can translate into added costs and less resource recoveries when a well bore does not reach its planned depth.

3) **Directional drilling on 40 acres:**

The Bonanza field directional reach window is short, which would require a steep angle for directionally drilled wells on 40-acre spacing. The primary reason such steep angles would be required is because of the severe lost circulation zone in the Green River formation, which would require Kerr-McGee to set approximately 2,000 feet of surface casing for directionally drilled wells. To start building angle at 2,000 feet, drill 1,320 feet horizontally, and be near vertical at the top of the Wasatch at approximately 4,300 feet, the well bore angles would have to be aggressive. Other analog fields in the Rockies that have utilized field wide directional drilling generally can either start building angle near the surface or have a longer vertical section which minimizes the well bore angles.

**Category 2 - Production Operations Issues:**

1) **Casing and tubing wear:**

Increased casing and tubing wear is anticipated in directional well bores. Since well bore integrity must be maintained for safe and efficient production operations, this wear and tear ultimately reduces the operating life of the well. A reduced well bore life translates into lower natural gas recoveries in the area penetrated by the well bore.

In addition, increased casing and tubing wear also translates to more remedial workover activity for a given well bore. This results in increased well downtime and a higher average workover expense. This effectively reduces the economic well life, also translating into a reduced ultimate natural gas recovery.

2) **Plunger lift efficiency and water production:**

Most of the wells in the Bonanza Area are expected to ultimately produce via plunger lift operations. Plunger lift unloads the associated produced water from the well bore allowing it to flow more natural gas. The deviated well path of a directional well reduces the efficiency of plunger lift operations and may add additional costs and therefore reduces the ultimate efficiency/recovery of a typical well.

**Conclusions**

In summary, directional drilling throughout the Bonanza Project Area would not meet the purpose and need for the project, which includes objectives to optimally recover the gas resource potential of the area and to develop and expand the area in an economical manner.

Eliminating this alternative from detailed analysis, however, does not preclude the use of directional drilling on a site-specific basis, as identified during the onsite inspection, to avoid impacts to resources of concern, and avoid major topographic features.
3.0 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social and economic values and resources) of the impact areas as identified in the Interdisciplinary Team Checklist (Appendix A) and presented in Chapter 1 of this assessment. This chapter provides the baseline for comparison of impacts/consequences described in Chapter 4. For some resources, such as air quality and socioeconomics, the potentially affected area is larger than the 12,698-acre Project Area. In those cases, a larger impact area is identified and potentially affected resources are discussed, as appropriate.

The greater Bonanza Project Area would be located about 30 miles south of Vernal, Utah, in Uintah County, in northeast Utah. The proposed linear power line ROW would begin at the Deseret Generation and Transmission power plant and extend southwest to Kerr-McGee’s existing Chapita substation near the White River. The proposed “blocked” area of energy development, involving the 95 proposed wells and their ancillary facilities, would be located north of the White River in the Southam Canyon Gas Field. The greater Project Area would occur on desert and semi-desert rolling terrain, broken by numerous ephemeral drainages which drain to the White River, at elevations ranging from 5,000 to 5,650 feet. Major access routes in the Project Area include: Seven Sister, Fidlar, Coyote Wash and the Hatch Reservoir Roads. The Seven Sisters and the Fidlar Roads are Uintah County Class 1-B, graveled roads. The small community of Bonanza, Utah is located about 7 air miles east of the Project Area.

3.2 AIR QUALITY

3.2.1 EXISTING SOURCES OF AIR POLLUTION

The Uinta Basin has seen recent oil and gas development on Tribal, federal, and private lands. Fugitive dust is the most prominent air pollutant in the region, and in the proposed Project Area, it is intermittent depending on winds and dust-causing activities.

Existing point and area sources of air pollution within the Project Area and surrounding region include the following:

- Exhaust emissions, primarily CO, oxides of nitrogen (NOx), and formaldehyde, from existing natural gas fired compressor engines used in production of natural gas;
- Natural gas dehydration still-vent emissions of BTEX and n-hexane;
- Gasoline and diesel-fueled vehicle tailpipe emissions of volatile organic compounds (VOC), NOx, CO, SO2, PM10, and PM2.5;
- Oxides of sulfur (SOx), NOx, and fugitive dust emissions from coal-fired power plants and coal mining and processing;
- Fugitive dust (in the form of PM10 and PM2.5) from vehicle traffic on unpaved roads, wind erosion in areas of soil disturbance, and road sanding during winter months; and
• Long-range transport of pollutants from distant sources contributing to regional haze.

### 3.2.2 REGULATORY ENVIRONMENT

#### 3.2.2.1 Criteria Pollutants

National and Utah Ambient Air Quality Standards (NAAQS) have been promulgated for the purpose of protecting human health and welfare with an adequate margin of safety. Pollutants for which standards have been set include sulfur dioxide (SO2), nitrogen dioxide (NO2), carbon monoxide (CO), and particulate matter less than 10 or 2.5 microns in aerodynamic diameter (PM10 and PM2.5). Existing air quality in the region is acceptable based on EPA standards for the protection of human health. The Uinta Basin is designated as an attainment area, meaning that the concentrations of criteria pollutants in the ambient air are less than the NAAQS. Site-specific air quality monitoring data are not available for the Project Area, however, background criteria pollutant concentrations for the Uinta Basin (Table 3-1 below) are relatively low and consistent with a rural area having low levels of industrial development (Utah Division of Environmental Quality - Division of Air Quality 2005).

Under the Prevention of Significant Deterioration (PSD) provisions of the Clean Air Act (CAA), incremental increases of specific pollutant concentrations are limited above a legally defined baseline level. The area surrounding the Project is designated as PSD Class II. For Class II areas, incremental increases in ambient pollutant concentrations are allowed as a result of controlled growth. The PSD increments for Class II areas are presented in Table 3-1.

**Table 3-1. Ambient Criteria Pollutant Concentrations in the Uinta Basin**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Period(s)</th>
<th>Uinta Basin Background Concentration(^a) (µg/m(^3))</th>
<th>NAAQS (µg/m(^3))</th>
<th>PSD Class II Increments (µg/m(^3))</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO(_2)</td>
<td>Annual</td>
<td>5</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>24-hour</td>
<td>10</td>
<td>365</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td>3-hour</td>
<td>20</td>
<td>1,300</td>
<td>512</td>
</tr>
<tr>
<td>NO(_2)</td>
<td>Annual</td>
<td>5</td>
<td>100</td>
<td>25</td>
</tr>
<tr>
<td>PM(_{10})</td>
<td>Annual</td>
<td>10</td>
<td>50</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>24-hour</td>
<td>28</td>
<td>150</td>
<td>30</td>
</tr>
<tr>
<td>PM(_{2.5})</td>
<td>Annual</td>
<td>9</td>
<td>15</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>24-hour</td>
<td>25</td>
<td>65</td>
<td>None</td>
</tr>
<tr>
<td>CO</td>
<td>8-hour</td>
<td>1,111</td>
<td>10,000</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>1-hour</td>
<td>1,111</td>
<td>40,000</td>
<td>None</td>
</tr>
<tr>
<td>O(_3)</td>
<td>1-hour</td>
<td>157</td>
<td>235</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>8-hour</td>
<td>105</td>
<td>157</td>
<td>None</td>
</tr>
</tbody>
</table>

\(^a\) Source: Dave Prey, Utah Division of Environmental Quality - Division of Air Quality (UDAQ), Personal Communication, November 30\(^{th}\), 2005. Data represent UDAQ estimates for rural areas within the Uinta Basin.
3.2.2.2 Hazardous Air Pollutants

Hazardous air pollutants (HAPs) are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental impacts. The EPA has classified 187 air pollutants as HAPs. Examples of listed HAPs associated with the oil and gas industry include formaldehyde, BTEX compounds (benzene, toluene, ethylbenzene, isomers of xylene), and normal-hexane (n-hexane).

There are no applicable Federal or State of Utah ambient air quality standards for assessing potential HAP impacts to human health. However, in order to provide a basis for assessing HAP exposures, the State of Utah has adopted Toxic Screening Levels (TSLs) which are applied during the air permitting process to assist in the evaluation of hazardous air pollutants released into the atmosphere (Utah Department of Environmental Quality-Air Quality Division 2000). The TSLs are derived from Threshold Limit Values (TLVs) published in the American Conference of Governmental Industrial Hygienists (ACGIH) – “Threshold Limit Values for Chemical Substances and Physical Agents” (American Conference of Governmental Industrial Hygienists 2003). These levels are not standards that must be met, but screening thresholds which if exceeded, would suggest that additional information is needed to evaluate potential health and environmental impacts. Table 3-2, below, lists the corresponding TSLs for each applicable HAP.

Table 3-2. Utah Toxic Screening Levels (TSLs)

<table>
<thead>
<tr>
<th>Pollutant and Averaging Time</th>
<th>Toxic Screening Levels b (µg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde (1-hour)</td>
<td>37</td>
</tr>
<tr>
<td>Benzene a (24-hour)</td>
<td>53</td>
</tr>
<tr>
<td>Toluene (24-hour)</td>
<td>6,280</td>
</tr>
<tr>
<td>Ethylbenzene (1-hour)</td>
<td>54,274</td>
</tr>
<tr>
<td>Ethylbenzene (24-hour)</td>
<td>14,473</td>
</tr>
<tr>
<td>Xylene (1-hour)</td>
<td>65,129</td>
</tr>
<tr>
<td>Xylene (24-hour)</td>
<td>14,473</td>
</tr>
<tr>
<td>n-Hexane (24-hour)</td>
<td>5,875</td>
</tr>
</tbody>
</table>

a Although there exists an acute TLV for benzene, the State of Utah does not apply a comparison to an acute TSL since the chronic TSL is more stringent.
b Source: Utah Department of Environmental Quality-Air Quality Division (2000).

3.2.3 RESULTS OF AIR QUALITY MODELING RELATIVE TO BONANZA PROJECT AREA

Emission inventories for criteria pollutants [nitrogen oxides (NOₓ), carbon monoxide (CO), sulfur dioxide (SO₂), and particulates (PM₁₀ and PM₂.₅)], volatile organic compounds (VOC), and hazardous air pollutants (HAP) [benzene, toluene, ethylbenzene, xylene (BTEX), n-hexane, and formaldehyde] were completed for development and operational-related activities. Pollutant dispersion modeling was performed using the Industrial Source Complex (ISC) dispersion model to assess the potential sub-grid and near-field scale air quality impacts from the Proposed Action.
The sub-grid analysis predicted criteria pollutant air quality impacts from short-term activities such as well pad and road construction, well drilling, and well completion activities. An impact analysis was developed for each short-term activity. The sub-grid modeling also assessed HAP impacts during full-field operation.

The near-field analysis addressed the criteria pollutant ambient air quality impacts that could occur from operation of permanent facilities during the 20 to 30-year life of the project. This analysis assessed ongoing well pad and gas processing equipment emissions and vehicle-related emissions after all proposed wells and central facilities are developed.

Air quality impacts as predicted with the ISC model are generally conservative and reflect maximum impacts that would be observed under less favorable meteorological conditions. Since winds and atmospheric stability play an important role in pollutant dispersion, pollutants will generally be better dispersed and diluted during convective conditions when there is greater turbulence and better mixing in the lower atmosphere. As indicated, the Project Area exhibits a high frequency of strong winds and tends to favor convective conditions, during the summer months and the daytime when the ground is rapidly heated and vertical movement is enhanced.

An annual emission inventory was developed for the Proposed Action representing the average level of emissions that would be released on an annual basis during well development and operations over the life of the project. Emission rates were calculated using applicable EPA emission factors and anticipated level of operational activities, such as estimated vehicle trips, load factors, and hours of operation. Emissions would result from the following project activities and sources:

- Well pad and road construction: earth-moving equipment fugitive dust, earth-moving equipment exhaust, and mobile source tailpipe emissions on access roads;
- Drilling: mobile source tailpipe emissions, fugitive dust emissions on access roads, and drill rig engine exhaust;
- Completion: mobile source tailpipe emissions, fugitive dust emissions on access roads, well venting emissions, and well fracturing engine emissions;
- Well pad operation: separator heater emissions, and flashing, working, and breathing emissions from condensate tanks;
- Gas processing: central dehydrator emissions, natural gas-driven compressor engine emissions, mobile source tailpipe emissions, and fugitive dust emissions on access roads; and
- Operation and maintenance: mobile source tailpipe emissions and fugitive dust emissions on access roads.

Total estimated emissions for the Proposed Action are summarized in Table 3-3. All temporary development-related emission calculations, which include well location and access road construction, well drilling, and well completion, are based on a development period of 2.75 years (the average of the predicted life of the project: 1.5 to 3 years). Based on Kerr-McGee’s commitment to water roads (see Section 2.2.11.2), pad and access road construction fugitive dust emission calculations assumed a 50% watering control efficiency while vehicle-generated fugitive dust calculations incorporated dust reduction factors from precipitation events. Annual
emissions which are assumed to continue for the 20 to 30 year life-of-project are estimated after all facilities have been constructed and are fully operational. These emission rates were applied in conjunction with the ISC dispersion model in order to evaluate project impacts against air quality significance thresholds.

Table 3-3. Proposed Action Emission Summary

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Emissions (tons/year)</th>
<th>Well Development a (tons/year)</th>
<th>Well Operations b (tons/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOX</td>
<td>149.5</td>
<td>32.0</td>
<td></td>
</tr>
<tr>
<td>CO</td>
<td>39.1</td>
<td>27.5</td>
<td></td>
</tr>
<tr>
<td>VOC</td>
<td>28.4</td>
<td>71.3</td>
<td></td>
</tr>
<tr>
<td>(SO_2)</td>
<td>2.6</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>PM10</td>
<td>237.8</td>
<td>31.4</td>
<td></td>
</tr>
<tr>
<td>PM2.5</td>
<td>38.8</td>
<td>6.9</td>
<td></td>
</tr>
<tr>
<td>Benzene</td>
<td>0.0</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>0.0</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>0.0</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Xylene</td>
<td>0.0</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>n-Hexane</td>
<td>0.0</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>0.1</td>
<td>0.0</td>
<td></td>
</tr>
</tbody>
</table>

a Assumes development scenario of 34 wells and pads per year for 2.75 years.
b Emissions after all 95 wells and pads are developed and operational.

3.3 CLIMATE

The transportation and dilution of air pollutants are primarily a function of wind speed and direction. Winds dictate the direction in which pollutants are transported. As wind speed increases, the dispersion of emitted pollutants also increases, thereby reducing pollutant concentrations.

Wind data within the Project Area have not been directly measured. Local terrain effects will influence the wind profiles specific to the Project Area. However, representative wind speed and direction data for the Uinta Basin are available at the Bonanza Deseret Power Plant for the years 1985, 1986, 1987, and 1992 (Utah Division of Environmental Quality - Division of Air Quality 1998). Figure 3-1 presents a wind rose depicting wind speed and direction for all four years of data. Note that the data represent the direction from which the wind is blowing (Wind Direction Origin). For example, winds blowing from the north would transport pollutants to the south. As shown, winds originate predominately from the east-northeast 16.7 percent of the time. The average measured wind speed is 3 meters per second.

The degree of stability in the atmosphere is also important to the dispersion of emitted pollutants. During stable conditions, vertical movement in the atmosphere is limited and the dispersion of pollutants is inhibited. Temperature inversions can result in very stable conditions with virtually no vertical air motion, thereby restricting dispersion. Conversely, during convective conditions, upward and downward movement in the atmosphere prevails, and the vertical mixing of pollutants in the atmosphere is enhanced.
Figure 3-1. Windrose for Bonanza, Utah.
Atmospheric stability can be categorized by stability classes “A” through “F”, with “A” representing a high degree of atmospheric turbulence, and “F” representing a high degree of atmospheric stability. A “D” stability represents a neutral atmosphere. Table 3-4 below presents the frequency distribution of the atmospheric stability classes for the region. As illustrated, slightly stable (Class E) atmospheric conditions occur the majority of the time (31.6%), followed by neutral conditions (27.1%) and moderately stable conditions (16.3%).

<table>
<thead>
<tr>
<th>Stability Class</th>
<th>Frequency of Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>A – Strongly Convective</td>
<td>9.9%</td>
</tr>
<tr>
<td>B – Moderately Convective</td>
<td>6.5%</td>
</tr>
<tr>
<td>C – Slightly Convective</td>
<td>8.5%</td>
</tr>
<tr>
<td>D – Neutral</td>
<td>27.1%</td>
</tr>
<tr>
<td>E – Slightly Stable</td>
<td>31.6%</td>
</tr>
<tr>
<td>F – Moderately Stable</td>
<td>16.3%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>


The potential for atmospheric dispersion is relatively high for the Project Area due to the frequency of strong winds. However, calm periods and nighttime cooling may enhance air stability, thereby inhibiting air pollutant transport and dilution. The region can experience frequent temperature inversions in winter when cold stable air masses settle into the valleys and snow cover and shorter days inhibit ground-level warming. Temperature inversions are less common during the summer months when daytime ground-level heating rapidly leads to inversion break-up and increased vertical mixing. The higher locations of the Project Area generally will remain warmer at night and less prone to the temperature inversions common to the valleys and drainages.

Mixing height is defined as the thickness of the air mass above ground within which rising warm air from the surface mixes by convection and turbulence. Local atmospheric conditions, terrain configuration, and source location determine the degree to which pollutants are diluted in this mixed layer. Mixing heights vary diurnally, with local weather systems, and seasonally. For the region, the mean annual morning mixing height is estimated to be approximately 300 meters, and the mean annual afternoon mixing height is approximately 2,400 meters (Holzworth 1972).

### 3.4 AREAS OF CRITICAL ENVIRONMENTAL CONCERN

An Area of Critical Environmental Concern (ACEC) is defined in FLPMA, Public Law 94-579, Section 103(a) as an area within the public lands where special management is required to protect and prevent irreparable damage to important historic, cultural and scenic values; fish, wildlife resources or other natural systems or processes; or to protect human life and safety from natural hazards. ACECs differ from other special designations, such as Wilderness Study Areas, in that designation by itself does not automatically prohibit or restrict other uses in the area. The management of ACECs is focused on the resource or natural hazard of concern and varies considerably from area to area. In addition, ACECs are protected by the provisions of 43 CFR...
3.0 - Affected Environment

3809.1-4(b)(3), which requires an approved plan of operations for all activities under the mining laws except for casual use.

There are no established ACECs within the Project Area. However, the BLM has determined the White River meets the established criteria to be nominated and considered an ACEC (BLM 2005 pg. G-5). Specifically, the White River has relevance due to the existence of unique geological formations, high value scenery, significant historical events, and riparian ecosystem. The White River’s relevant values have substantial significance due to qualities that make it fragile, sensitive, rare, irreplaceable, exemplary, and unique. An area of unique rock spires named “Goblin City” by the John Wesley Powell 1969 expedition is a major destination point for White River boaters. The place where Powell Expedition members camped and explored the nearby fragile geological formations is now a cottonwood grove campsite used by boaters. The river and adjacent landscape provide spectacular scenery viewed by increasing numbers of visitors. The lush riparian vegetation present in this area is rare in the desert ecosystem. The White River provides designated Critical Habitat for the endangered Colorado pikeminnow as well as habitat for other threatened, endangered, and sensitive fish and raptor species.

On February 10, 2003, the Southern Utah Wilderness Alliance (SUWA) submitted a nomination for a White River ACEC in response to the Vernal RMP’s Notice of Intent invitation for nominations of ACEC. The proposal was included in the Vernal Draft RMP. Approximately 7,325 acres of the nominated White River ACEC are located within the Project Area

3.5 CULTURAL RESOURCES

The Class I data review conducted for the Project Area is considered a good basis for assessing the potential impact to archaeological sites in the event that lands are developed for oil and gas. Archival record searches resulted in the identification of 145 previous cultural resource inventories in the Project Area, as a whole. Approximately 60% of the previous cultural resource inventories resulted in a finding of no cultural resources.

A total of 159 archaeological sites have been identified within the Project Area, 58 sites have been recommended eligible to the National Register of Historic Places (NRHP) under Criterion D for additional research potential. Identified archeological resources in the area are largely artifact scatters which demonstrate spatial patterning of artifacts and temporary camps with features that possess integrity as well as the potential for additional buried cultural materials. Sites include prehistoric and proto-historic lithic scatters, temporary camps, habitations, resource processing camps, slab-lined storage cists, and rock shelters; and historic temporary camps, artifact scatters, inscriptions, and cairns. The majority of prehistoric sites lacked temporal indicators to determine cultural affiliation, however there are some Fremont camps (based on ceramic assemblage), one isolated Folsom Paleoindian Point, and a few sites with proto-historic Numic occupations.

In summary, the approximately 12,698-acre Project Area proposed for oil and gas development has a moderately high density of previously recorded sites.

Visitors to public lands enjoy hiking and sight-seeing activities, especially along roadways close to cities, towns and communities. There is a concern that cultural resources on public lands close to these human centers and along roadways have been compromised by vandalism and theft.
3.0  - Affected Environment

3.6  FLOODPLAINS

Floodplains are protected by Executive Order 11988 which requires that all Federal agencies take action to reduce the risk of flood loss; minimize the impact of floods on human safety, health and welfare; and, to restore and preserve the natural and beneficial values served by floodplains.

Existing BLM data identifies 100-year floodplain with the White River, Kennedy, Coyote and Red Washes and unnamed ephemeral washes which drain into them (Figure 2 in Appendix D). The proposed linear power line and pipeline ROWs, in the northern portion of the greater Project Area, would cross 100-year flood plain associated with Kennedy Wash in sections 35 and 36 T8S, R23E, sections 4 and 8, T9S, R23E; and with Red Wash in section 12 in T9S, R22E.

The White River and its floodplain are in the southeast and southwest corners of the blocked portion of the Project Area. No construction or surface disturbing actions are proposed for these corners, thus the river’s floodplains would not be directly affected. However, development is proposed in the south central and northwest portions in/near the blocked portion of the Project Area: Sections 9 and 16, T10S, R23E; and, section 36, T9S, R22E and section 31 T9S, R23E. These two ephemeral drainages flow directly into the White River.

All of the drainages involving proposed development are ephemeral in nature, but are prone to flooding in response to the intense, short-duration thunderstorms that frequent the area during the summer months.

The USGS formerly maintained two surface water gauging stations on the White River and one on Coyote Wash in the vicinity of the Project Area. None of these stations were monitored for discharge beyond 1986, but these data are still useful for determining flow conditions for these streams. Although no surface disturbance would be directly associated with Coyote Wash, the following discussion does provide comparative information applicable to Kennedy and Red Washes.

Table 3-5 presents summary flow data for the period of record for the three gauging stations. Mean monthly stream flow over the period of record for the White River at the gauging station at Asphalt Wash is relatively steady between August and April, ranging from 295 cfs to 497 cfs. During May, June, and July, high flows in the White River range from about 1,000 cfs to 4,300 cfs, primarily from snowmelt, but also from short duration, high intensity thunderstorms. Fifty percent of all daily flows in the White River at this location were less than 400 cfs, and 90% of all flows were less than 1,010 cfs for the period of record. Further downstream near the White River’s confluence with the Green River at Ouray, Utah, mean monthly stream flows are larger during the fall through spring months, ranging from 383 cfs to 781 cfs. Flows increase during the summer and peak flows are about 1,000 cfs more than at the station at Asphalt Wash. Ninety percent of all daily flows in the White River at this location were less than 1,960 cfs, and 50% of all flows were less than 500 cfs for the period of record.

For Coyote Wash, stream flows are completely dependent on large precipitation events. The record daily peak flow of 548 cfs occurred in February 1980. Ninety percent of all flows were less than 2.2 cfs for the period of record, and 85% of all observations were of no flow. Figure 3-2 below shows the hydrograph for this station and illustrates the ephemeral nature of the stream, with peak flows only occurring in direct response to rainfall events. The vertical nature of the peaks also indicates that the stream is susceptible to flash flooding.
Table 3-5. Stream Flow Data from USGS Gauging Stations

<table>
<thead>
<tr>
<th>USGS Gauging White River 0906700</th>
<th>Range of Monthly Mean Discharge (cfs)</th>
<th>Peak Daily Discharge (cfs)</th>
<th>Mean Annual Discharge (cfs)</th>
<th>Period of Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>White River at Asphalt Wash 09306700</td>
<td>295 (December) – 1,412 (June)</td>
<td>4,380 (June 10, 1975)</td>
<td>535</td>
<td>October 1974 – September 1977</td>
</tr>
<tr>
<td>White River at Mouth near Ouray, Utah 09306900</td>
<td>383 (January) – 2,392 (June)</td>
<td>5,550 (June 10, 1984)</td>
<td>822</td>
<td>April 1974 – September 1986</td>
</tr>
<tr>
<td>Coyote Wash near Mouth near Ouray, Utah 09306878</td>
<td>0.026 (December) – 22.3 (March)</td>
<td>548 (February 20, 1980)</td>
<td>4.48</td>
<td>October 1976 – September 1983</td>
</tr>
</tbody>
</table>

Figure 3-2. Hydrograph for Coyote Wash near Ouray, Utah (USGS Station 09306878) for October 1976 through October 1983

3.7 INVASIVE AND NOXIOUS WEEDS

The spread of invasive and noxious weeds is a concern in areas proposed for surface development activities. Noxious weeds are plants that are designated by a federal, State, or county government as injurious to public health, agriculture, recreation, wildlife, or property. A noxious weed is commonly defined as a plant that grows out of place and is competitive, persistent, and pernicious (James et al. 1991). Invasive weeds include plants that are not listed as noxious and not native to this country. Many consider a plant invasive if it has been introduced into an environment where
it did not evolve. As a result, invasive plants do not have any natural enemies (e.g. insects, other plants) to limit their reproduction.

Roads provide a major conduit for the spread of noxious or invasive species into natural areas, particularly in arid and semiarid landscapes of the American West (Gelbard and Belnap 2003). Plant communities that are characterized by deep or fertile soils and have been/are disturbed appear to be most vulnerable. Clearing sites of existing vegetation, disturbing and/or mixing soils, addition of fill, and grading of roads and well pads would create areas of deep, bare soil that would be susceptible to weed establishment (Trombulak and Frissell 2000). As such, these actions could lead to the transport and establishment of weeds throughout the Project Area.

Table 3-6 summarizes those weeds designated and published as noxious by Uintah County and by the State of Utah, as per the authority vested in the Commissioner of Agriculture under Section 4-17-3, Utah Noxious Weed Act.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bermudagrass</td>
<td><em>Cynodon dactylon</em></td>
</tr>
<tr>
<td>Canada thistle</td>
<td><em>Cirsium arvense</em></td>
</tr>
<tr>
<td>Diffuse knapweed</td>
<td><em>Centaurea diffusa</em></td>
</tr>
<tr>
<td>Dyer’s woad</td>
<td><em>Isatis tinctoria</em></td>
</tr>
<tr>
<td>Field bindweed</td>
<td><em>Convolvulus arvensis</em></td>
</tr>
<tr>
<td>Hoary cress (aka Whitetop)</td>
<td><em>Cardaria draba</em></td>
</tr>
<tr>
<td>Johnsongrass</td>
<td><em>Sorghum halepense</em></td>
</tr>
<tr>
<td>Leafy spurge</td>
<td><em>Euphorbia esula</em></td>
</tr>
<tr>
<td>Medusahead</td>
<td><em>Taeniatherum caput-medusae</em></td>
</tr>
<tr>
<td>Musk thistle</td>
<td><em>Carduus nutans</em></td>
</tr>
<tr>
<td>Perennial pepperweed</td>
<td><em>Lepidium latifolium</em></td>
</tr>
<tr>
<td>Perennial sorghum</td>
<td><em>Sorghum halepense &amp; Sorghum album</em></td>
</tr>
<tr>
<td>Purple loosestrife</td>
<td><em>Lythrum salicaria</em></td>
</tr>
<tr>
<td>Quackgrass</td>
<td><em>Elymus repens</em></td>
</tr>
<tr>
<td>Russian knapweed</td>
<td><em>Centaurea repens</em></td>
</tr>
<tr>
<td>Russian olive</td>
<td><em>Elaeagnus angustifolia</em></td>
</tr>
<tr>
<td>Saltcedar</td>
<td><em>Tamarix ramosissima</em></td>
</tr>
<tr>
<td>Scotch thistle (aka Scotch cottonthistle)</td>
<td><em>Onopordum acanthium</em></td>
</tr>
<tr>
<td>Spotted knapweed</td>
<td><em>Centaurea stoebbe</em></td>
</tr>
<tr>
<td>Squarrose knapweed</td>
<td><em>Centaurea vigata</em></td>
</tr>
<tr>
<td>Yellow star-thistle</td>
<td><em>Centaurea solstitialis</em></td>
</tr>
</tbody>
</table>
Russian thistle, halogeton, and cheatgrass are the primary invasive annual species that dominate the disturbed areas throughout the Project Area. In addition to the above listed weed species, BLM observations have noted that occurrences of black henbane (*Hyoscyamus niger*), and houndstongue (*Cynoglossum officinale*) are increasing in Uintah County.

### 3.8 THREATENED, ENDANGERED OR CANDIDATE PLANT SPECIES

Special status plants include federally listed and proposed-for-listed species under the Endangered Species Act (ESA), species that are candidates for listing under the ESA, and species that are listed as sensitive by the BLM. Appendix C lists all the special status species for the Vernal Field Office and evaluates the occurrence or potential for occurrence of each species within the Project Area. The two special status plant species with the potential to occur within the Project Area are the Uinta Basin hookless cactus and the Ute Ladies’-tresses.

#### 3.8.1 UINTA BASIN HOOKLESS CACTUS (*SCLEROCACTUS GLAUCUS*)

The Uinta Basin hookless cactus’ (federally listed as threatened) unhooked large central spine differentiates it from other members of the *Sclerocactus* genus, which have either a hooked large central spine or none (USFWS 1990). However, at least a few individuals in most Uinta Basin hookless cactus populations possess moderately to strongly hooked spines (Goodrich and Neese 1986). The Uinta Basin hookless cactus is a desired species among cactus collectors because of its “beautiful purplish-red flowers” (USFWS 1979). Illegal collection of this cactus is the primary threat to the conservation and recovery of the species.

Habitat for the Uinta Basin hookless cactus generally consists of gravelly or rocky surfaces on river terrace deposits and lower mesa slopes (USFWS 1990), as well as gravel littered draws (Goodrich and Neese 1986), that are underlain by clay or silty clay. More recently this species has also been found on the Green River formation in the Basin. This species does not grow in sandy soils. The species occurs on varying exposures, but is more abundant on south-facing exposures, slopes to about 30 percent grade, and where terrace deposits break from level tops to steeper side slopes. The Uinta Basin hookless cactus is found at elevations from 5,000 to 5,600 feet above mean sea level (amsl) within the desert shrub vegetation community (USFWS 1990). Habitat for the Uinta Basin hookless cactus occurs in the Bonanza Project Area.

#### 3.8.2 UTE LADIES’-TRESSES (*SPIRANTHES DILUVIALIS*)

Ute ladies’-tresses has been proposed for de-listing; however, currently this species is a federally-listed threatened plant species and the protection afforded a listed species under the ESA is still in effect. Across its range, habitat for the Ute ladies’-tresses occurs primarily on moist, permanently sub-irrigated, or seasonally flooded soils in valley bottoms, gravel bars, old oxbows, or floodplains bordering springs, lakes, rivers, or perennial streams at elevations between 4,300 to 7,000 feet. However, some Ute ladies’-tresses populations north of Utah occur at elevations below 4,300 feet. The species often occurs on recently created riparian habitats such as point bars or sand bars, as well as areas that are regularly flooded, such as backwaters. Recurrent disturbance, either through direct manipulation, such as irrigation, grazing or mowing, or restoration of the historic disturbance regime is a key factor in the establishment and maintenance of Ute ladies’-tresses populations (USFWS 1995a).
The central populations of Ute ladies’-tresses, such as those found on Utah BLM lands, are found in wet or mesic riparian meadows or in understory wetland meadows of riparian habitats in the Colorado River drainage (USFWS 1995a). Common associated vegetation of the central Ute ladies’-tresses populations consists of redtop (*Agrostis stolonifera*), reedgrass (*Calamagrostis* spp.), sedges (*Carex* spp.), thistle (*Cirsium* spp.), orchardgrass (*Dactylis glomerata*), helleborine (*Epipactis gigantea*), horsetail (*Equisetum* spp.), and evening primrose (*Oenothera elata*).

Marginal potential habitat for the Ute ladies’-tresses occurs in the Project Area along the White River due to the naturally-occurring high-saline soils contributing sediment to the White River. To date, no Ute ladies’-tresses have been found along the White River. No development is planned in the White River corridor.

### 3.9 THREATENED, ENDANGERED, CANDIDATE WILDLIFE SPECIES

Section 7(a) of the Endangered Species Act (ESA) requires federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any has been designated. Regulations implementing this interagency cooperation provision of the ESA are codified at 50 CFR 402. Section 7 (a)(2) requires federal agencies to ensure that activities they authorize, fund, or carry out are not likely to adversely affect or jeopardize the continued existence of a federally listed species or result in the adverse modification or destruction of its critical habitat. If a federal action “may affect, is likely to adversely affect” a federally listed species or its critical habitat, the responsible federal agency must enter into formal consultation with the USFWS. Candidate species are managed to prevent future listing as threatened or endangered.

This section discusses federally-listed as threatened, endangered or proposed for listed species under the ESA and species that are candidate for listing under the ESA. The list of threatened, endangered and Candidate species with the potential to occur in the Project Area was provided by the USFWS Utah Field Office. The list of Sensitive species with the potential to occur in the Project Area was provided by BLM. A brief description of each of the federally listed and sensitive species with the potential to occur in the Project Area is presented below.

### 3.9.1 THREATENED, ENDANGERED, CANDIDATE BIRD SPECIES

#### 3.9.1.1 Bald Eagle (*Haliaeetus leucocephalus*)

The USFWS recently downlisted the bald eagle from endangered to threatened (USFWS 1995b). The species is also listed as State-threatened and protected under the Bald and Golden Eagle Protection Act.

Bald eagle wintering habitat is typically associated with food source concentrations. These areas include major rivers that remain unfrozen whereby fish and waterfowl are available, and near ungulate winter ranges that provide carrion (Bureau of Reclamation 1994). Roadside carrion is one of the bald eagle’s primary winter food sources. Bald eagles may be sensitive to human activity, avoiding areas where construction activities are taking place.

Bald eagles are often seen in and near the southern portion of the Project Area during winter months, usually from early November through late March. Within the Project Area, or immediately outside and adjacent to it, wintering bald eagles are known to commonly roost in
mature cottonwoods along the White River and forage in upland habitats for carrion and small mammals.

3.9.1.2 Mexican Spotted Owl (*Strix occidentalis lucida*)

The Mexican spotted owl is a federally threatened species. Populations are declining because of continued logging of old-growth forest, domestic livestock grazing, the degradation of riparian areas, and fire suppression. The Mexican spotted owl nests, roosts and forages in a diverse array of biotic communities (USFWS 2003). The preferred nesting habitat of the species includes complex, thickly forested canyons, steep-walled rocky canyons, uneven-aged, multi-storied mature or old growth stands that have high canopy closure. In the northern portion of its range, most Mexican spotted owl nests are located in caves or are found on cliff ledges in steep-walled canyons (USFWS 1993). MSO tend to avoid areas that include human and surface disturbances.

There is no designated Critical Habitat for the MSO on the land administered by the VFO. The Diamond Mountain and Book Cliffs planning areas have been identified as containing suitable MSO habitat according to the 1997 and 2000 models. The majority of the modeled MSO habitats in the VFO area were further evaluated by computer models or ground-truthed between 2003 and 2005 (SWCA 2005).

Potential MSO breeding/nesting habitat was identified near the Project Area according to the 2005 Assessment of Potential Mexican Spotted Owl Nesting Habitat on BLM-Administered Lands in Northeastern Utah (SWCA 2005). The SWCA surveys identified both fair and good habitat along portions of the White River in the Bonanza Project Area. In the summer of 2006, MSO surveys were conducted (for another oil and gas operator) according to USFWS protocol in all potential nesting habitat near the Project Area. No Mexican spotted owls were observed during these surveys. Numerous great horned owls were observed during these surveys, which may limit the potential of the habitat to support MSO nesting, as great-horned owls are known predators of the MSO. Current survey protocols require additional surveys if more than four years have elapsed between the end of the first survey and the initiation of the Proposed Action, then another complete inventory is recommended prior to project implementation.

3.9.1.3 Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)

The western yellow-billed cuckoo, a federal Candidate for listing under the ESA, is a riparian obligate bird that feeds in cottonwood groves and nests in willow thickets. Nest sites have been correlated with large and relatively large willow-cottonwood patches, dense understories, high local humidity, low local temperature, and in proximity to slow or standing water. In Utah, this neotropical migrant nests in riparian areas and has been documented in cottonwood habitat along the Green River (Parrish et al. 2001, BLM 2005). Potential breeding habitat occurs in the southern portion of the Project Area along the White River.

3.9.2 THREATENED, ENDANGERED, CANDIDATE MAMMAL SPECIES

3.9.2.1 Black-footed Ferret (*Mustela nigripes*)

The black-footed ferret is a federally endangered species. The species’ original distribution in North America closely corresponded to that of prairie dogs (Fitzgerald et al. 1994). In Utah, white-tailed prairie dog (*Cynomys leucurus*) colonies provide essential habitat for black-footed ferrets. Ferrets depend almost exclusively on prairie dogs for food and they also use prairie dog burrows for shelter, parturition, and raising their young (Wilson and Ruff 1999). BLM records do
not indicate white-tailed prairie dog colonies exist within the Project Area. However, field reconnaissance has identified numerous small colonies throughout portions of the Project Area.

As an integral part in the recovery plan for the black-footed ferret, the 1985 Book Cliffs RMP was amended to allow for the reintroduction of black-footed ferrets in the Coyote Basin Primary Management Zone (BLM 1999b). The southern boundary of this management zone is approximately 5 miles northeast of the Deseret Generation and Transmission plant and outside the greater Project Area. The reintroduction program was authorized under Section 10j of the ESA and implemented by the USFWS, in cooperation with the BLM, the Colorado Division of Wildlife and the Utah Division of Wildlife Resources. Section 10j of the ESA classifies reintroduced populations as “nonessential-experimental”. Such a provision allows for more flexible management of the animal and eases the more stringent requirements of the ESA relative to a listed species.

Monitoring of the Coyote Basin PMZ has revealed the ferrets are expanding into surrounding areas outside of the Primary Management Zone. Due to the close proximity of the power plant to the Primary Management Zone and Kennedy Wash, it is reasonable to expect black-footed ferrets could be associated with the proposed Project Area.

3.9.3 THREATENED, ENDANGERED, CANDIDATE FISH SPECIES

The greater Project Area drains into the Green River and ultimately the Colorado River. Currently there are four fish species and their designated Critical Habitat associated with this proposed project. These Colorado River fish species include the Colorado pikeminnow, razorback sucker, humpback chub, and bonytail. These species have experienced severe population declines throughout their range as a result of the dams constructed along much of the Colorado River system. They continue to be impacted by activities that deplete or degrade the flow of downstream waters into the Colorado River (USFWS 1990a, b).

The endangered Colorado River fish use backwater and river depression sites as cover and a food source. Water quality is considered a primary constituent element of designated Critical Habitat for the Colorado pikeminnow and the razorback sucker. Research is limited regarding threats posed by environmental contaminants to the endangered Colorado River fishes (Woodward et al. 1985; Krahm et al. 1986). However, these studies have shown that contaminants, including petroleum hydrocarbons released via spills/leaks, can affect behavioral functions which have been shown to impair feeding behavior (Woodward et al. 1987). Early life stages of all fish are generally more sensitive to environmental contaminants than juveniles or adults, and disruption of behavioral functions can result in population declines or changes in year-class strength if enough individuals are affected (Little et al. 1993).

3.9.3.1 Colorado Pikeminnow (Ptychocheilus lucius)

The Colorado pikeminnow is federally listed as endangered by the USFWS. The Colorado pikeminnow thrives in swift flowing muddy rivers with quiet, warm backwaters. Colorado pikeminnow are primarily piscivorous (fish-eaters), but smaller individuals also eat insects and other invertebrates. The species spawns during the spring and summer over riffle areas with gravel or cobble substrate. Eggs are randomly splayed onto the bottom, and usually hatch in less than one week (UDWR 2006).

The Colorado pikeminnow were historically found in the mainstem Colorado River and its tributaries from Wyoming to the Gulf of California. Currently, wild populations of the Colorado
pikeminnow persist only in the upper basin. The White River currently supports some of the highest densities of Colorado pikeminnow in the Green River sub-basin. The White River is used for year round residence and also as a migration corridor to other connected habitats in the Green and Yampa rivers. Adult Colorado pikeminnow are present in the White River upstream to the Taylor Draw Dam. Portions of the White River and it 100-year floodplain in and near the Project Area have been designated by the FWS as Critical Habitat for the Colorado pikeminnow (USFWS 1994).

3.9.3.2 Humpback Chub (*Gila cypha*)

The humpback chub is a federally endangered minnow found in the Upper Colorado River Basin. The humpback prefers deep, fast-moving, turbid waters often associated with large boulders and steep cliffs. Humpback chubs feed predominately on small aquatic insects, diatoms and filamentous algae. Spawning occurs between April and July during high flows from snowmelt (UDWR 2006).

Historically, the humpback chub inhabited canyons of the Colorado River and four of its tributaries: the Green, Yampa, White and Little Colorado Rivers. Today, populations currently exist near the Colorado/Utah border in Westwater Canyon in Utah and at Black Rocks, in Colorado. Smaller numbers have been found in the Yampa and Green Rivers in Dinosaur National Monument, Desolation and Gray Canyons on the Green River in Utah, Cataract Canyon on the Colorado River in Utah and the Colorado River in Arizona. The largest known population is in the Little Colorado River in the Grand Canyon, where there may be up to 10,000 fish. There are no population estimates available for the rest of the upper Colorado River basin (USFWS 2002). Critical habitat for the humpback chub has been designated downstream in the Green River outside of the project area.

3.9.3.3 Bonytail (*Gila elegans*)

The bonytail is a federally listed endangered species found in the Upper Colorado River Basin. This fish typically lives in large, fast-flowing waterways of the Colorado River system; however, their distribution and habitat status are largely unknown. Adult bonytail feed on terrestrial insects, zooplankton, algae and plant debris. Young feed mainly on aquatic insects. Although bonytail spawning in the wild is now rare, the species does spawn in the spring and summer over gravel substrate. Many bonytail are now produced in fish hatcheries, with the offspring released into the wild when they are large enough to survive in the altered Colorado River system environment (UDWR 2006).

Bonytail once were common in portions of the upper and lower Colorado River basins. The bonytail is now the rarest of the endangered fish species in the Colorado River basin. Upstream of Lake Powell, this fish is nearly extinct, and in the last decade only a handful have been captured on the Yampa River in Dinosaur National Monument, on the Green River at Desolation and Gray Canyons and on the Colorado River at the Colorado/Utah border. In the lower basin, bonytail exist in Lake Mohave and Lake Havasu (USFWS 2002). Critical habitat for the bonytail has been designated downstream in the Green River outside of the project area.
3.9.3.4 Razorback Sucker (*Xyrauchen texanus*)

The razorback sucker is a federally listed endangered species found in the Upper Colorado River Basin. This species is a large, bronze to yellow fish that grows to a weight of about 15 pounds and has a sharp-edged keel behind the head. Razorbacks are found in deep, clear to turbid waters of large rivers and some reservoirs over mud, sand or gravel. Like most suckers, the razorback feeds on both plant and animal matter. The razorback sucker spawns in the spring. Breeding males turn black up to the lateral line, with brilliant orange extending across the belly (UDWR 2006).

Historically, this species inhabited the Colorado River and its tributaries from Wyoming to the Gulf of California. The current distribution of razorback suckers in the Upper Colorado River basin is confined to small groups of fish in several widely distributed locations. Most of these fish occur in an area including the lower Yampa River, and the Green River from the mouth of the Yampa River downstream to its confluence with the Duchesne River. Small populations may also occur in the lower Green River, the Colorado River at Grand Valley, and in the San Juan River upstream from Lake Powell (USFWS 1998). Portions of the White River and its 100-year floodplain, and the Green River and its 100-year floodplains downstream from the Project Area have been designated by the FWS as Critical Habitat for the razorback sucker (USFWS 1994).

### 3.10 WATER QUALITY (SURFACE AND GROUND)

The Bonanza Project Area lies completely in the Uinta structural basin of northeastern Utah. The climate within the basin varies widely. Average total precipitation ranges from 6 inches near Ouray to over 40 inches per year in the Uinta Mountains. The basin generally has short, warm summers and long, cold winters, especially at higher elevations.

The Uinta Basin is drained by the Green River and its tributaries. The Green River is a major river in the western United States. It originates in Wyoming along the Continental Divide and joins the Colorado River south of the Project Area at Green River, Utah. The flow in the Green River is partially controlled by the Flaming Gorge Dam near the Utah-Wyoming Stateline. Major tributaries to the Green River include the Yampa, Duchesne and the White Rivers. The White River, which runs near the southern portion of the Project Area, drains the eastern portion of the basin, including portions of the basin within Colorado. Within the Uinta Basin, the State of Utah has classified five drainages as hydrological sub-units: the Upper Green, the Green, the Ashley-Brush, the Duchesne/Strawberry, and the White River (Utah Division of Water Resources, 2001). The Bonanza Project Area lies within the White River sub-unit.

### 3.10.1 SURFACE WATER

The Project Area lies predominately to the north of the White River within portions of seven watersheds, as shown in Figure 2 in Appendix D. The majority of the proposed project facilities, including most of the well pads, would be located in the Saddle Tree Draw-White River watershed. Other portions of the Project Area lie within the Southam Canyon-White River, Asphalt Wash, Inlet to Lower Coyote Wash, Lower Coyote Wash, and Inlet to Sand Wash-White River watersheds.

The proposed co-located 16-inch pipeline and power line would be entirely located within the Inlet to Sand Wash-White River watershed. The proposed power line extending from the Deseret Generation and Transmission power plant, located in section 35, T8S, R23E, would be mainly
located in the Lower Coyote Wash watershed but would also be partially located in the Kennedy Wash watershed. Currently, surface water in the Project Area is used in limited quantities for livestock and wildlife watering and industrial purposes.

Figure 3 in Appendix D, shows the major surface water features in the Project Area and vicinity. The Project Area is drained by numerous ephemeral washes that mainly flow to the south into the White River. The White River is perennial with high flows occurring in spring in response to snowmelt in the mountains of Colorado to the east. Kennedy, Coyote and Red Washes are the major drainages associated with the proposed power and pipeline ROWs in the northern portion of the Project Area. These washes have 100-year floodplains associated with them. The blocked portion of the Project Area, located primarily north of the White River is drained by the North Atechees Wash and a network of smaller washes. The North Atechees Wash is an ephemeral wash that does have 100-year floodplain associated with it. Other ephemeral drainages in this blocked portion of the Project Area have developed a dendritic drainage pattern and are incised with rills and gullies typical of badland topography; however no 100-year floodplain is associated with these drainages. The extreme southeast corner of the Project Area is located south of the White River. Drainage in this area would be directly to the White River from minor depressions or to Asphalt Wash and then the White River. Asphalt Wash is one of the major north-tending ephemeral drainages to the White River. None of the Alternatives propose development in the area south of the White River, as such impacts related to this area is not factored into impacts discussions.

The Utah Water Quality Board classifies Utah surface water resources according to quality and degree of protection (UDEQ 2000). All streams and water bodies in Utah are assigned to one of five classes. Within the Project Area, all streams, including the White River, are classified as Class 2B, 3A, and 4. Class 2B streams are protected for secondary contact recreation such as boating, wading, or similar uses. Class 3A streams are protected for cold water species of game fish and other cold water aquatic life. Class 4 streams are protected for agricultural uses including irrigation of crops and stock watering.

3.10.1.1 Surface Water Quality

Water quality refers to biological, chemical, and physical characteristics of a water sample relative to a standard defined for protection of drinking water, aquatic organisms, and other water uses. Biological water quality indicators include microbiological analyses for fecal coliform organisms. Physical indicators include the concentration of suspended sediments within the water. Other important indicators of physical water quality include temperature, specific conductance (a measure of the ability of water to conduct electric current), and pH (a measure of the hydrogen ion activity). A pH less than 7 indicates the water is acidic and a pH greater than 7 indicates alkaline water. Chemical water quality is determined by the concentration of various chemical constituents in the water, including metals, ionic constituents such as chloride and bicarbonate, and total dissolved solids (TDS). Hardness (a measure of the amount of calcium and magnesium) is also an important indicator and is reported as milligrams per liter (mg/L) of calcium carbonate (CaCO3).

The EPA has established primary and secondary drinking water standards (EPA 2003). These regulations specify maximum contaminant levels (MCLs) and secondary maximum contaminant levels (SMCLs). The MCLs are health-based. Although these MCLs apply legally apply only to public drinking water supplies, they are also useful as general indicators of water quality. The SMCLs are for constituents that affect esthetic qualities of water, including taste. Most States, including Utah, have also adopted water-quality standards (UDEQ 2000).
Salinity and Sodium Hazards

Excessive salinity and sodium content is a special water quality concern in portions of the Uinta Basin and in other areas. Sodium contributes directly to the total salinity of the water and may be toxic to sensitive crops. The sodium hazard of water is estimated by the sodium adsorption ratio (SAR), which is the proportion of sodium to calcium plus magnesium in the water. SAR is calculated using the formula:

$$\text{SAR} = \frac{\text{Na}^+}{[(\text{Ca}^{2+} + \text{Mg}^{2+})/2]^{1/2}}$$

(all ions reported in milliequivalents)

Waters with SARs in the range 0 to 6 can generally be used on all soils with little problem of a sodium buildup. When SARs range from 6 to 9, chances for soil permeability problems increase (Hergert et al. 1997). Water with an SAR greater than 9 should not be used for irrigation, even if the total salt content is relatively low. Continued use of water having a high SAR leads to a breakdown in the physical structure of the soil. The sodium replaces calcium and magnesium adsorbed on the soil clays and causes dispersion of soil particles. This dispersion results in breakdown of soil aggregates and causes the soil to become hard and compact when dry and increasingly impervious to water penetration. Table 3-7 summarizes the sodium hazard classes and their characteristics.

<table>
<thead>
<tr>
<th>Sodium Hazard Class</th>
<th>SAR (at SC = 2,250)</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>0 to 4</td>
<td>Low sodium water can be used for irrigation on most soil with minimal danger of harmful levels of exchangeable sodium.</td>
</tr>
<tr>
<td>Medium</td>
<td>4 to 9</td>
<td>Medium sodium water will present an appreciable sodium hazard in fine textured soil having high cation exchange capacity.</td>
</tr>
<tr>
<td>High</td>
<td>9 to 14</td>
<td>High sodium water may produce harmful levels of exchangeable sodium in most soils.</td>
</tr>
<tr>
<td>Very High</td>
<td>More than 14</td>
<td>Very high sodium water is generally unsatisfactory for irrigation purposes.</td>
</tr>
</tbody>
</table>

Source: U.S. National Salinity Laboratory 1954.

Project Area Surface Water Quality

The water quality characteristics of surface waters in the vicinity of the Bonanza Project Area reflect the chemical nature of precipitation and the geologic strata over which the water flows. The following section describes the chemical quality of these waters, based on data collected by the USGS at the three gauging stations and data collected by the State of Utah.

Surface water quality analyses were conducted by the USGS in conjunction with discharge measurements at the three USGS gauging stations described above. Table 3-8 below provides a summary of the data collected at USGS station 09306700 on the White River at Asphalt Wash. This station is located within the Project Area. For this station, samples for chemical analysis
were collected from August 1974 to July 1978, and from April 1981 to August 1983. Waters in the White River are described as calcium-sodium sulfate-bicarbonate type waters with moderate to very high hardness (140 – 400 mg/L as CaCO₃). Total dissolved solids (TDS) content is variable during the year, ranging from 222 mg/L to 892 mg/L, and averages 509 mg/L, slightly above the SMCL of 500 mg/L. The waters are generally neutral to alkaline with pH ranging from 6.5 to 8.6 units. The maximum values of iron and sulfate are above the SMCLs of 250 mg/L and 300 ug/L, respectively. However, sulfate exceeded the SMCL 3 times and iron only once during the period of record. In addition, concentrations of ammonia, aluminum, and copper exceeded the State of Utah aquatic standards once, six times, and twice, respectively. Total suspended solids range from 46 mg/L to over 8,000 mg/L during high-intensity runoff events, and exceeded the aquatic standard of 90 mg/L for all but two measurements conducted during the period of record.

Table 3-8. Summary of Water Quality Analyses for White River at Asphalt Wash, USGS Gauging Station 09306700

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Standards</th>
<th>Drinking Water</th>
<th>Aquatic Biotas</th>
<th>No. of Samples</th>
<th>Summary Statistics</th>
<th>Mean</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Range</td>
<td>Mean</td>
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<tr>
<td><strong>General Water Quality Indicators</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature (°C)</td>
<td></td>
<td></td>
<td></td>
<td>108</td>
<td>0 – 23.5</td>
<td>8.93</td>
</tr>
<tr>
<td>Specific Conductance (μS/cm)</td>
<td></td>
<td></td>
<td></td>
<td>56</td>
<td>320 – 1,650</td>
<td>752</td>
</tr>
<tr>
<td>Dissolved Oxygen (mg/L)</td>
<td>Min 6.5</td>
<td></td>
<td></td>
<td>23</td>
<td>3.8 - 11.9</td>
<td>8.43</td>
</tr>
<tr>
<td>pH (standard units)</td>
<td>6.5-9.0²</td>
<td>6.5-9.0</td>
<td></td>
<td>42</td>
<td>6.5 - 8.6</td>
<td>8.02</td>
</tr>
<tr>
<td>Total Hardness (mg/L)</td>
<td></td>
<td></td>
<td></td>
<td>50</td>
<td>140 - 400</td>
<td>273</td>
</tr>
<tr>
<td>Total Dissolved Solids (mg/L)</td>
<td>500²</td>
<td>1,200</td>
<td></td>
<td>52</td>
<td>222 - 892</td>
<td>509</td>
</tr>
<tr>
<td>Total Suspended Solids (mg/L)</td>
<td>90</td>
<td>63</td>
<td></td>
<td>46 - 8,700</td>
<td>1,400</td>
<td></td>
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<tr>
<td><strong>Ionic Constituents</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calcium (mg/L)</td>
<td></td>
<td></td>
<td></td>
<td>52</td>
<td>36 - 83</td>
<td>66.4</td>
</tr>
<tr>
<td>Magnesium (mg/L)</td>
<td></td>
<td></td>
<td></td>
<td>52</td>
<td>11 - 48</td>
<td>26.0</td>
</tr>
<tr>
<td>Sodium (mg/L)</td>
<td></td>
<td></td>
<td></td>
<td>52</td>
<td>13 - 180</td>
<td>65.9</td>
</tr>
<tr>
<td>Potassium (mg/L)</td>
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<td></td>
<td>52</td>
<td>1.1 - 6.1</td>
<td>2.3</td>
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<td>Chloride (mg/L)</td>
<td>250²</td>
<td>52</td>
<td></td>
<td>5.8 - 230</td>
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<tr>
<td>Sulfate (mg/L)</td>
<td>250²</td>
<td>52</td>
<td></td>
<td>55 - 470</td>
<td>175</td>
<td></td>
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<tr>
<td>Fluoride (mg/L)</td>
<td>4¹, 2²</td>
<td>1.2 - 2.4⁴</td>
<td></td>
<td>52</td>
<td>0.1 - 2</td>
<td>0.35</td>
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<tr>
<td>Ammonia (mg/L)</td>
<td>0.11 – 2.4⁹</td>
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<td>51</td>
<td>&lt;0.01 – 0.15</td>
<td>0.035</td>
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<tr>
<td>Silica (mg/L)</td>
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<td></td>
<td></td>
<td>52</td>
<td>7.1 – 17</td>
<td>13.0</td>
</tr>
<tr>
<td>Bicarbonate (mg/L)</td>
<td></td>
<td></td>
<td></td>
<td>46</td>
<td>125 - 280</td>
<td>226</td>
</tr>
<tr>
<td>Nitrite &amp; Nitrate (mg/L)</td>
<td>10¹</td>
<td>4</td>
<td></td>
<td>52</td>
<td>0.01 - 0.97</td>
<td>0.15</td>
</tr>
<tr>
<td><strong>Trace Metals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum (ug/L)</td>
<td>50 - 200²</td>
<td>87</td>
<td></td>
<td>39</td>
<td>&lt;10 – 460</td>
<td>46.0</td>
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<tr>
<td>Arsenic (ug/L)</td>
<td>10¹</td>
<td>190</td>
<td></td>
<td>36</td>
<td>&lt;1 – 4</td>
<td>1.24</td>
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<tr>
<td>Barium (ug/L)</td>
<td>2,000³</td>
<td>1,000</td>
<td></td>
<td>32</td>
<td>&lt;35 – 300</td>
<td>66.6</td>
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</table>

Bonanza Area Environmental Assessment  3-20
### Parameters

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Standards</th>
<th>Summary Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Drinking Water</td>
<td>No. of Samples</td>
</tr>
<tr>
<td>Boron (ug/L)</td>
<td></td>
<td>34</td>
</tr>
<tr>
<td>Copper (ug/L)</td>
<td>1,300(^1), 1,000(^2)</td>
<td>6</td>
</tr>
<tr>
<td>Iron (ug/L)</td>
<td>300(^3)</td>
<td>36</td>
</tr>
<tr>
<td>Manganese (ug/L)</td>
<td>50(^4)</td>
<td>52</td>
</tr>
<tr>
<td>Selenium (ug/L)</td>
<td>50(^3)</td>
<td>30</td>
</tr>
<tr>
<td>Strontium (ug/L)</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>Zinc (ug/L)</td>
<td>5,000(^5)</td>
<td>18</td>
</tr>
</tbody>
</table>

All samples are dissolved (filtered) unless otherwise noted.
Average values calculated using one-half the detection limit for non-detect values.
Bolded values exceed standards.

\(^1\)Federal Drinking Quality Standards Primary Maximum Contaminant Level (MCL)
\(^2\)Federal Drinking Quality Standards Secondary Maximum Contaminant Level (SMCL)
\(^3\)Aquatic life (Utah Water Quality Standards, R317-2 Utah Administrative Code)
\(^4\)Value is dependant on temperature and pH

Source: http://waterdata.usgs.gov/nwis

Table 3-9 below provides a summary of the data collected at USGS station 09306900 on the White River above the confluence with the Green River near Ouray, Utah. Waters in the White River at this location are also described as calcium-sodium sulfate-bicarbonate type waters with moderate to very high hardness (97 – 400 mg/L as CaCO\(_3\)). Total dissolved solids (TDS) concentrations are similar to upstream, ranging from 197 mg/L to 566 mg/L, with an average of 541 mg/L. The waters are generally alkaline with pH ranging from 7.1 to 8.8 units. The maximum values of iron and sulfate are above the SMCLs of 250 mg/L and 300 ug/L, respectively. Sulfate exceeded the SMCL 22 times out of 142 samples (15.5%). Total iron exceeded the SMCL for all but one sample, whereas dissolved iron exceeded the standard only once during the period of record. These data show that the high concentrations of iron detected are contained in suspended sediments within the water. In addition, concentrations of ammonia, aluminum, and selenium exceeded the State of Utah aquatic standards seven times, three times, and twice, respectively. Total suspended solids range from 3 mg/L to over 50,000 mg/L during high-intensity runoff events, and exceeded the aquatic standard of 90 mg/L for all but ten measurements conducted during the period of record. The sodium-adsorption ratio (SAR) of the water ranges from 0.7 to 6. These values are within the safe range for SAR.

### General Water Quality Indicators

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<thead>
<tr>
<th>Parameters</th>
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</tr>
</thead>
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<td>No. of Samples</td>
</tr>
<tr>
<td>Temperature (°C)</td>
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<td>261</td>
</tr>
<tr>
<td>Specific Conductance (uS/cm)</td>
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<td>167</td>
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<tr>
<td>Dissolved Oxygen (mg/L)</td>
<td>Min 6.5</td>
<td>144</td>
</tr>
<tr>
<td>pH (standard units)</td>
<td>6.5-9.0(^7)</td>
<td>150</td>
</tr>
<tr>
<td>Total Hardness (mg/L)</td>
<td></td>
<td>129</td>
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### 3.0 - Affected Environment

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<th>Summary Statistics</th>
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<tbody>
<tr>
<td></td>
<td>Drinking Water</td>
<td>Aquatic Biota³</td>
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<tr>
<td>Total Dissolved Solids (mg/L)</td>
<td>500²</td>
<td>1,200</td>
</tr>
<tr>
<td>Total Suspended Solids (mg/L)</td>
<td>90</td>
<td>183</td>
</tr>
<tr>
<td>Sodium-Absorption Ratio</td>
<td></td>
<td>129</td>
</tr>
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#### Ionic Constituents

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<th>Parameters</th>
<th>No. of Samples</th>
<th>Range</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium (mg/L)</td>
<td>142</td>
<td>24 – 94</td>
<td>66.1</td>
</tr>
<tr>
<td>Magnesium (mg/L)</td>
<td>142</td>
<td>4.8 – 55</td>
<td>27.6</td>
</tr>
<tr>
<td>Sodium (mg/L)</td>
<td>142</td>
<td>18 – 230</td>
<td>75.4</td>
</tr>
<tr>
<td>Potassium (mg/L)</td>
<td>142</td>
<td>1.2 – 6.7</td>
<td>2.30</td>
</tr>
<tr>
<td>Chloride (mg/L)</td>
<td>142</td>
<td>6.9 – 86</td>
<td>33.1</td>
</tr>
<tr>
<td>Sulfate (mg/L)</td>
<td>142</td>
<td>51 – 570</td>
<td>197</td>
</tr>
<tr>
<td>Fluoride (mg/L)</td>
<td>126</td>
<td>0.1 – 1.2</td>
<td>0.31</td>
</tr>
<tr>
<td>Bicarbonate (mg/L)</td>
<td>97</td>
<td>132 – 400</td>
<td>242</td>
</tr>
<tr>
<td>Nitrite &amp; Nitrate (mg/L)</td>
<td>4</td>
<td>0.01 – 0.8</td>
<td>0.18</td>
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<tr>
<td>Orthophosphate (mg/L)</td>
<td>57</td>
<td>&lt;0.01 – 0.06</td>
<td>0.02</td>
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<tr>
<td>Ammonia (mg/L)</td>
<td>73</td>
<td>&lt;0.01 – 0.26</td>
<td>0.05</td>
</tr>
<tr>
<td>Silica (mg/L)</td>
<td>142</td>
<td>9.2 – 17</td>
<td>12.8</td>
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#### Trace Metals

<table>
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<tr>
<th>Parameters</th>
<th>No. of Samples</th>
<th>Range</th>
<th>Mean</th>
</tr>
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<tbody>
<tr>
<td>Aluminum (ug/L)</td>
<td>87</td>
<td>&lt;10 – 180</td>
<td>34.2</td>
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<tr>
<td>Arsenic (ug/L)</td>
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<td>&lt;1 – 5</td>
<td>1.78</td>
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<td>Barium (ug/L)</td>
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<td>53 – 400</td>
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<td>Boron (ug/L)</td>
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<td>&lt;20 – 490</td>
<td>117</td>
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<td>Total iron (ug/L)</td>
<td>1,000</td>
<td>70 – 78,000</td>
<td>17,400</td>
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<td>Iron (ug/L)</td>
<td>107</td>
<td>&lt;3 – 350</td>
<td>31.4</td>
</tr>
<tr>
<td>Manganese (ug/L)</td>
<td>34</td>
<td>&lt;1 – 20</td>
<td>6.21</td>
</tr>
<tr>
<td>Selenium (ug/L)</td>
<td>65</td>
<td>&lt;1 – 8</td>
<td>1.71</td>
</tr>
<tr>
<td>Strontium (ug/L)</td>
<td>44</td>
<td>400 – 1200</td>
<td>859</td>
</tr>
<tr>
<td>Vanadium (ug/L)</td>
<td>40</td>
<td>0.9 – 9.4</td>
<td>2.49</td>
</tr>
<tr>
<td>Zinc (ug/L)</td>
<td>46</td>
<td>&lt;3 – 180</td>
<td>24.9</td>
</tr>
</tbody>
</table>

All samples are dissolved (filtered) unless otherwise noted
Average values calculated using one-half the detection limit for non-detect values
Bolded values exceed standards
¹Federal Drinking Quality Standards Primary Maximum Contaminant Level (MCL)
²Federal Drinking Quality Standards Secondary Maximum Contaminant Level (SMCL)
³Aquatic life (Utah Water Quality Standards, R317-2 Utah Administrative Code)
⁴Value is dependant on temperature and pH
Source: [http://waterdata.usgs.gov/nwis](http://waterdata.usgs.gov/nwis)

Table 3-10 below provides a summary of data collected by the State of Utah from White River station 493362 for the period November 2000 to December 2001. These data are similar to those collected at USGS gauging station 09306900, except for much lower concentrations of suspended solids. This may be because these samples were collected during a time of drought.
### Table 3-10. Summary of Water Quality Analyses for White River, Utah Water Quality Station 493362 (November 2000 to December 2001)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Standards</th>
<th>No. of Samples</th>
<th>Range</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Drinking Water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature (°C)</td>
<td></td>
<td>14</td>
<td>0.02 – 27.6</td>
<td>12.6</td>
</tr>
<tr>
<td>Specific Conductance (μS/cm)</td>
<td></td>
<td>27</td>
<td>250 – 1010</td>
<td>747</td>
</tr>
<tr>
<td>Dissolved Oxygen (mg/L)</td>
<td>Min 6.5</td>
<td>14</td>
<td>5.51 – 12.31</td>
<td>9.0</td>
</tr>
<tr>
<td>Alkalinity (mg/L)</td>
<td></td>
<td>14</td>
<td>123 – 225</td>
<td>194</td>
</tr>
<tr>
<td>pH (standard units)</td>
<td>6.5-9.0</td>
<td>27</td>
<td>8.10 – 8.66</td>
<td>8.35</td>
</tr>
<tr>
<td>Total Hardness (mg/L)</td>
<td></td>
<td>13</td>
<td>214 – 359</td>
<td>286</td>
</tr>
<tr>
<td>Total Dissolved Solids (mg/L)</td>
<td>500$^2$</td>
<td>14</td>
<td>248 – 692</td>
<td>542</td>
</tr>
<tr>
<td>Total Suspended Solids (mg/L)</td>
<td>90</td>
<td>14</td>
<td>25.5 – 914</td>
<td>258</td>
</tr>
<tr>
<td>Calcium (mg/L)</td>
<td></td>
<td>14</td>
<td>41.6 – 73.9</td>
<td>61.6</td>
</tr>
<tr>
<td>Magnesium (mg/L)</td>
<td></td>
<td>14</td>
<td>14.4 – 42.8</td>
<td>30.2</td>
</tr>
<tr>
<td>Sodium (mg/L)</td>
<td></td>
<td>14</td>
<td>19.5 – 104</td>
<td>75.1</td>
</tr>
<tr>
<td>Potassium (mg/L)</td>
<td></td>
<td>14</td>
<td>1.51 – 3.63</td>
<td>2.1</td>
</tr>
<tr>
<td>Chloride (mg/L)</td>
<td>250$^2$</td>
<td>15</td>
<td>&lt;0.1 – 27</td>
<td>15.6</td>
</tr>
<tr>
<td>Sulfate (mg/L)</td>
<td>250$^2$</td>
<td>14</td>
<td>59.6 – 312</td>
<td>225</td>
</tr>
<tr>
<td>Bicarbonate (mg/L)</td>
<td></td>
<td>14</td>
<td>150 – 274</td>
<td>236</td>
</tr>
<tr>
<td>Nitrite &amp; Nitrate (mg/L)</td>
<td>10$^3$</td>
<td>4</td>
<td>0.1 – 0.45</td>
<td>0.23</td>
</tr>
<tr>
<td>Phosphorous (mg/L)</td>
<td></td>
<td>15</td>
<td>0.021 – 0.676</td>
<td>0.250</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drinking Water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aquatic Biota$^3$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No. of Samples</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>General Water Quality Indicators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature (°C)</td>
<td></td>
<td>14</td>
<td>0.02 – 27.6</td>
<td>12.6</td>
</tr>
<tr>
<td>Specific Conductance (μS/cm)</td>
<td></td>
<td>27</td>
<td>250 – 1010</td>
<td>747</td>
</tr>
<tr>
<td>Dissolved Oxygen (mg/L)</td>
<td>Min 6.5</td>
<td>14</td>
<td>5.51 – 12.31</td>
<td>9.0</td>
</tr>
<tr>
<td>Alkalinity (mg/L)</td>
<td></td>
<td>14</td>
<td>123 – 225</td>
<td>194</td>
</tr>
<tr>
<td>pH (standard units)</td>
<td>6.5-9.0</td>
<td>27</td>
<td>8.10 – 8.66</td>
<td>8.35</td>
</tr>
<tr>
<td>Total Hardness (mg/L)</td>
<td></td>
<td>13</td>
<td>214 – 359</td>
<td>286</td>
</tr>
<tr>
<td>Total Dissolved Solids (mg/L)</td>
<td>500$^2$</td>
<td>14</td>
<td>248 – 692</td>
<td>542</td>
</tr>
<tr>
<td>Total Suspended Solids (mg/L)</td>
<td>90</td>
<td>14</td>
<td>25.5 – 914</td>
<td>258</td>
</tr>
<tr>
<td>Calcium (mg/L)</td>
<td></td>
<td>14</td>
<td>41.6 – 73.9</td>
<td>61.6</td>
</tr>
<tr>
<td>Magnesium (mg/L)</td>
<td></td>
<td>14</td>
<td>14.4 – 42.8</td>
<td>30.2</td>
</tr>
<tr>
<td>Sodium (mg/L)</td>
<td></td>
<td>14</td>
<td>19.5 – 104</td>
<td>75.1</td>
</tr>
<tr>
<td>Potassium (mg/L)</td>
<td></td>
<td>14</td>
<td>1.51 – 3.63</td>
<td>2.1</td>
</tr>
<tr>
<td>Chloride (mg/L)</td>
<td>250$^2$</td>
<td>15</td>
<td>&lt;0.1 – 27</td>
<td>15.6</td>
</tr>
<tr>
<td>Sulfate (mg/L)</td>
<td>250$^2$</td>
<td>14</td>
<td>59.6 – 312</td>
<td>225</td>
</tr>
<tr>
<td>Bicarbonate (mg/L)</td>
<td></td>
<td>14</td>
<td>150 – 274</td>
<td>236</td>
</tr>
<tr>
<td>Nitrite &amp; Nitrate (mg/L)</td>
<td>10$^3$</td>
<td>4</td>
<td>0.1 – 0.45</td>
<td>0.23</td>
</tr>
<tr>
<td>Phosphorous (mg/L)</td>
<td></td>
<td>15</td>
<td>0.021 – 0.676</td>
<td>0.250</td>
</tr>
<tr>
<td>Trace Metals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum (ug/L)</td>
<td>50 - 200$^2$</td>
<td>87</td>
<td>0.01 – 151</td>
<td>65.8</td>
</tr>
<tr>
<td>Barium (ug/L)</td>
<td>2,000$^1$</td>
<td>1,000</td>
<td>55 – 115</td>
<td>78.8</td>
</tr>
<tr>
<td>Iron (ug/L)</td>
<td>300$^2$</td>
<td>1,000</td>
<td>30.1 – 207</td>
<td>74.1</td>
</tr>
<tr>
<td>Selenium (ug/L)</td>
<td>50$^1$</td>
<td>8</td>
<td>1.0 – 1.8</td>
<td>1.3</td>
</tr>
</tbody>
</table>

All samples are dissolved (filtered) unless otherwise noted
Average values calculated using one-half the detection limit for non-detect values
Bolded values exceed standards
$^1$Federal Drinking Quality Standards Primary Maximum Contaminant Level (MCL)
$^2$Federal Drinking Quality Standards Secondary Maximum Contaminant Level (SMCL)
$^3$Aquatic life (Utah Water Quality Standards, R317-2 Utah Administrative Code)
Source: http://www.waterquality.utah.gov

Table 3-11 below provides a summary of the data collected at USGS station 09306878 on Coyote Wash near Ouray, Utah. Waters in Coyote Wash are described as sodium sulfate-bicarbonate type waters with soft to moderate hardness (6 – 53 mg/L as CaCO$_3$). Total dissolved solids (TDS) concentrations are generally lower than in the White River, ranging from 73 mg/L to 645 mg/L, with an average of 277 mg/L. All parameters analyzed are below the associated standards for all samples, except for iron. Seven out of 11 samples exceeded the SMCL of 250 mg/L for dissolved iron.
iron. Total suspended solids (TSS) range from 5,080 mg/L to over 90,000 mg/L. All samples for TSS exceeded the aquatic standard of 90 mg/L. These high suspended solids concentrations are reflective of the ephemeral nature of the stream. The sodium-adsorption ratio (SAR) of the water ranges from 5 to 15. Waters with SAR values above 9 are considered to be unsuitable for use as irrigation water.

Table 3-11. Summary of Water Quality Analyses for Coyote Wash at Mouth, USGS Gauging Station 09306878

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Standards Drinking Water</th>
<th>Aquatic Biota[^3]</th>
<th>No. of Samples</th>
<th>Summary Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>General Water Quality Indicators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature (°C)</td>
<td>32</td>
<td>0 – 27</td>
<td>14.6</td>
<td></td>
</tr>
<tr>
<td>Specific Conductance (uS/cm)</td>
<td>13</td>
<td>330 – 1,020</td>
<td>471</td>
<td></td>
</tr>
<tr>
<td>Dissolved Oxygen (mg/L)</td>
<td>Min 6.5</td>
<td>5</td>
<td>6.0 – 10.1</td>
<td>8.24</td>
</tr>
<tr>
<td>Total Hardness (mg/L)</td>
<td>11</td>
<td>6 – 53</td>
<td>20.6</td>
<td></td>
</tr>
<tr>
<td>Sodium Absorption Ratio</td>
<td>11</td>
<td>5 – 15</td>
<td>9.64</td>
<td></td>
</tr>
<tr>
<td>Total Dissolved Solids (mg/L)</td>
<td>500[^2]</td>
<td>1,200</td>
<td>11</td>
<td>73 – 645</td>
</tr>
<tr>
<td>Total Suspended Solids (mg/L)</td>
<td>90</td>
<td>40</td>
<td>5,080 – 96,900</td>
<td>29.699</td>
</tr>
<tr>
<td>Ionic Constituents</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calcium (mg/L)</td>
<td>12</td>
<td>1.3 – 17</td>
<td>6.16</td>
<td></td>
</tr>
<tr>
<td>Magnesium (mg/L)</td>
<td>12</td>
<td>0.5 – 2.6</td>
<td>1.13</td>
<td></td>
</tr>
<tr>
<td>Sodium (mg/L)</td>
<td>12</td>
<td>29 – 190</td>
<td>90.4</td>
<td></td>
</tr>
<tr>
<td>Potassium (mg/L)</td>
<td>12</td>
<td>0.7 – 3.7</td>
<td>1.88</td>
<td></td>
</tr>
<tr>
<td>Chloride (mg/L)</td>
<td>250[^2]</td>
<td>2.2 – 18</td>
<td>8.65</td>
<td></td>
</tr>
<tr>
<td>Sulfate (mg/L)</td>
<td>250[^2]</td>
<td>9.7 – 150</td>
<td>38.9</td>
<td></td>
</tr>
<tr>
<td>Fluoride (mg/L)</td>
<td>4[^1], 2[^2]</td>
<td>1.2 – 2.4[^4]</td>
<td>11</td>
<td>0.1 – 0.7</td>
</tr>
<tr>
<td>Silica (mg/L)</td>
<td>12</td>
<td>4.4 – 24</td>
<td>13.9</td>
<td></td>
</tr>
<tr>
<td>Bicarbonate (mg/L)</td>
<td>5</td>
<td>232 – 500</td>
<td>304</td>
<td></td>
</tr>
<tr>
<td>Nitrite &amp; Nitrate (mg/L)</td>
<td>10[^3]</td>
<td>4</td>
<td>10</td>
<td>0.3 – 1.9</td>
</tr>
<tr>
<td>Trace Metals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boron (ug/L)</td>
<td>11</td>
<td>100 – 330</td>
<td>245</td>
<td></td>
</tr>
<tr>
<td>Iron (ug/L)</td>
<td>300[^2]</td>
<td>1,000</td>
<td>492</td>
<td></td>
</tr>
<tr>
<td>Manganese (ug/L)</td>
<td>50[^2]</td>
<td>9</td>
<td>&lt;10 – 30</td>
<td>10.0</td>
</tr>
</tbody>
</table>

All samples are dissolved (filtered) unless otherwise noted
Average values calculated using one-half the detection limit for non-detect values
Bolded values exceed standards
[^1]Federal Drinking Quality Standards Primary Maximum Contaminant Level (MCL)
[^4]Value is dependant on temperature and pH
Source: http://www.waterquality.utah.gov
3.0 - Affected Environment

3.10.2 GROUNDWATER

Shallow groundwater is present in the unconsolidated alluvial aquifers associated with the White River. Tertiary bedrock aquifers in the Project Area are found in the lower Uinta Formation, Parachute Creek Member of the Green River Formation (the “Birds Nest Aquifer”), the Douglas Creek Member of the Green River Formation (the “Douglas Creek Aquifer”), and Wasatch Formation. Total dissolved solids (TDS) concentrations generally range from 500 to 3000 mg/l within these aquifers in the Uinta Basin and can exceed 10,000 mg/l in some deeper part of the Uinta Formation. The “Birds Nest Aquifer” is confined by the overlying Uinta Formation. Recharge of the aquifer occurs by leakage from the Uinta Formation and through infiltration to the aquifer. Low yields of non-potable groundwater can be obtained from both aquifers (BLM, 2006a).

3.11 WETLANDS/RIPARIAN

Riparian habitat in the Project Area (142 acres, or 1 percent) is associated with the White River along the southern portion of the Project Area. A small area of riparian habitat is also located near the Bridge Site along the existing Glen Bench Road. Plant species found within these habitats include Fremont cottonwood (Populus fremontii), cattails (Typha sp.), some willow species (Salix sp.), as well as characteristic sedges (Carex sp.), rushes (Juncus sp.), and saltgrass. No development is planned in these riparian areas.

3.12 WILD AND SCENIC RIVERS

The Wild and Scenic Rivers Act (Public Law 90-524) is designed to preserve free-flowing rivers with outstandingly remarkable values (ORVs) in their natural condition for the benefit of present and future generations, balancing the nation’s water resources development policies with river conservation and recreational goals. The evaluation of rivers for potential designation into the National Wild and Scenic Rivers System is a three-step process: 1) determine the river’s eligibility, 2) assign a tentative classification (e.g. wild, scenic, or recreational), and 3) determine suitability for final designation.

There are no wild and scenic rivers (WSRs) currently designated within the Project Area; however, 44 miles of the White River have been determined to be eligible for WSR designation. Approximately 10 of these miles are located within or near the Project Area between Asphalt Wash to where the river leaves Section 18, T10S, R23E. This 10-mile segment of the White River has been assigned a tentative classification of wild. However, this eligible, tentative “wild” area currently possesses 3.75 miles of roads (including Saddletree Draw, Atchees Wash Road, and Asphalt Wash Road) that are included on the Uintah County Transportation Plan. A final suitability determination has not been completed.

3.13 RANGELAND MANAGEMENT

The Project Area contains portions of five BLM grazing allotments: Antelope Draw, Little Emma, Olsen AMP, Seven Sisters, and Southam Canyon. All five allotments in the Project Area are grazed by sheep during the winter season. Livestock grazing on State lands is administered by the SITLA. Livestock grazing on State land within these allotments is administered consistent with and concurrent to BLM.
An animal unit month (AUM) is defined as the amount of forage needed to feed one cow and nursing half, or in this situation, five sheep, for one month. Between the five allotments, there are approximately 11,108 acres of land allotted for grazing by the BLM within the boundaries of the Project Area, however approximately 1,829 acres of the land on the allotments occur on slopes greater than 40%; leaving 9,278 acres that are utilized by the livestock. Table 3-12 below lists total allotment information as well as actual usable acreage within the Project Area boundary. There are total of 941 usable AUMs within the Project Area. BLM estimates the average carrying capacity of these allotments to be about 11.2 acres per AUM. Assuming this average carrying capacity, an estimated total of 126 AUMs would be associated with State-administered public lands within the total Project Area.

Existing livestock facilities within the Project Area include allotment boundary fences, gap fences (associated with the White River), and water developments (e.g., reservoirs, springs).

Additionally, livestock grazing occurs on the portion of the Project Area on Tribal lands. Formal allotments and grazing seasons have not been identified on Tribal lands.

Table 3-12. Grazing Allotment Information on BLM Lands in the Project Area

<table>
<thead>
<tr>
<th>Allotment Name</th>
<th>Total Allotment Acres</th>
<th>Usable Acres w/in Project Area</th>
<th>Percent Usable Acres within Project Area</th>
<th>Total Allotment AUMs</th>
<th>Acres per AUM</th>
<th>Usable AUMs within Project Area</th>
<th>Estimated Percent of Usable AUMs within Project Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antelope Draw</td>
<td>56,927</td>
<td>79</td>
<td>&lt;1</td>
<td>3,679</td>
<td>15</td>
<td>5</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Little Emma</td>
<td>38,472</td>
<td>4111</td>
<td>11</td>
<td>3,626</td>
<td>11</td>
<td>374</td>
<td>10</td>
</tr>
<tr>
<td>Olsen AMP</td>
<td>103,239</td>
<td>36</td>
<td>&lt;1</td>
<td>9,268</td>
<td>11</td>
<td>3</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Seven Sisters</td>
<td>17,051</td>
<td>4842</td>
<td>23</td>
<td>1,920</td>
<td>9</td>
<td>538</td>
<td>28</td>
</tr>
<tr>
<td>Southam Canyon</td>
<td>12,702</td>
<td>210</td>
<td>2</td>
<td>1,315</td>
<td>10</td>
<td>21</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>228,391</td>
<td>*9278</td>
<td></td>
<td>19,808</td>
<td></td>
<td>941</td>
<td></td>
</tr>
</tbody>
</table>

*Totals are approximated according to available mapping data.

### 3.14 VEGETATION

Vegetative communities within the Uinta Basin are primarily influenced by topography and elevation. Arid and semi-arid desert shrub communities, primarily consisting of saltbush, shadscale, rabbitbrush, greasewood and horsebrush are found within the lower elevation areas of the Uinta Basin. As the plateau gently rises, the vegetation generally shifts to sagebrush, pinyon-juniper woodlands, and then to mixed coniferous forests. Riparian corridors and grasslands also occur along perennial streams and springs throughout the basin.

The composition and extent of native plant communities within the Uinta Basin have been modified primarily by livestock grazing and by the development and extraction of oil and gas resources. Livestock grazing has decreased native plant species composition and has promoted establishment of annual weeds such as cheatgrass, Russian thistle and halogeton. Noxious weeds such as Russian knapweed have been found in the Project Area in association with the oil and gas activities and existing roads. In general, while populations of undesirable weedy species are common where native plant communities have been disturbed or removed, they vary in density within undisturbed communities, depending on the health and species diversity of the native
vegetative community. Drought has also contributed to the loss of shrubs in the desert shrub community type.

Vegetative communities in the Project Area are directly related to topographical and elevational features. Vegetation communities associated with the greater Project Area are based on existing BLM data (refer to Figure 4 in Appendix D). A brief description of these communities is provided below. Table 3-14 below provides a summary of the acreages of the vegetation communities and their percent composition in the Project Area.

### Table 3-14. Summary of Vegetation Communities with the Bonanza Project Area

<table>
<thead>
<tr>
<th>Vegetation Community</th>
<th>Acres in Vernal Field Area</th>
<th>Percent of Vernal Field Area</th>
<th>Acres in Project Area</th>
<th>Percent of Project Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Sagebrush</td>
<td>3,161,979*</td>
<td>57*</td>
<td>6,857</td>
<td>54</td>
</tr>
<tr>
<td>Salt Desert Shrub</td>
<td>1,109,466</td>
<td>20</td>
<td>4,190</td>
<td>33</td>
</tr>
<tr>
<td>Badlands/Rock Outcrop</td>
<td>166,420</td>
<td>3</td>
<td>1,651</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>5,547,332</td>
<td></td>
<td>12,698</td>
<td>100</td>
</tr>
</tbody>
</table>

*Black sagebrush is included in the broader sagebrush community which includes Wyoming and mountain sagebrush

#### 3.14.1 BLACK SAGEBRUSH

The black sagebrush community is dominated by black sagebrush (*Artemisia tridentata nova*) and accounts for about 6,857 acres (or 54 percent) of the Project Area. This mature community encompasses much of the proposed pipeline and is associated with the shaley, shallow loam soils. Other dominant community species include: bluebunch wheatgrass (*Elymus spicatus*), western wheatgrass (*Elymus smithii*), junegrass (*Koeleria macrantha*), and at the higher elevations, blue grama (*Bouteloua gracilis*). Forb species occurring in this community include: phlox (*Phlox* spp.), mustards (*Brassica* spp.), Indian paintbrush (*Castilleja chromosa*), and sego lily (*Calochortus nuttallii*). Many of these forb species also are important forage species for sage grouse (Edwards et al. 1996). Due to the shallow soils and little topsoil associated with this community, there is low potential for successful reclamation following disturbance.

#### 3.14.2 SALT DESERT SHRUB

Although not as abundant as the black sagebrush community, the desert shrub community does occupy a considerable portion of the Project Area, 4,190 acres (33 percent). Desert shrublands are associated with flat benches and sandy soils in areas where shrub cover is limited. Soils in this community range from shallow clay loams to deep sands which along with soil chemistry have set the pattern of shrub dominance and species composition on various sites. Soil salinity in this community is relatively high and as such, vegetation treatments or manipulations are not very successful due to the shallow soils and low moisture availability (BLM 2005). Transition areas of the desert shrub community with badlands and rock outcroppings also tend to have shallow soils, low water holding capacity and are typically sparsely vegetated.

The desert shrub community is variable in its composition and tends to be dominated by shadscale (*Atriplex confertifolia*), winterfat (*Ceratoides lanata*), Mormon tea (*Ephedra viridis*), Gardner’s saltbrush (*Atriplex gardneri*), mat saltbrush (*Atriplex corrugata*), four-winged saltbrush (*Atriplex canescens*), rabbitbrush (*Chrysothamnus* spp.), and greasewood (*Sarcobatus vermiculatus*). The understory is sparse and may contain Indian ricegrass (*Achnatherum hymenoides*), galletta (*Pleuraphis jamesii*), scarlet globemallow (*Sphaeralcea coccinea*), bud
sagebrush (Artemisia spinescens), spring parsley (Cymopterus watsonii), and textile onion (Allium textile) (BLM 2005).

3.14.3 BADLANDS AND ROCK OUTCROP

Badlands/rock outcrops are areas of little or no topsoil accumulations are generally devoid of vegetation therefore have low vegetation production. Vegetation generally grows in areas where water can collect and at the base of slopes (BLM 2005). Dominant species include: Gardner’s saltbrush (Atriplex gardneri) and mat saltbrush (Atriplex corrugata) (BLM 2005). Badlands/rock outcrops comprise approximately 1,651 acres (or 13 percent) of the Project Area, associated with ridgetops and eroded walls adjacent to the White River and the west side of Sand Wash. Due to the lack of adequate topsoil development in this community, the opportunity for successful reclamation following disturbance is minimal.

3.15 FISH AND WILDLIFE

3.15.1 GENERAL WILDLIFE

Small mammals potentially found within the Project Area and surrounding region include cottontail rabbits (Sylvilagus spp.), black-tailed jackrabbit (Lepus californicus), coyote (Canis latrans), badger (Taxidea taxus), striped skunk (Mephitis mephitis), western spotted skunk (Spilogale gracilis), and various species of rodents and bats. Smaller migratory birds common to the region include black-billed magpie (Pica pica), horned lark (Eremophila alpestris), common raven (Corvus corax), loggerhead shrike (Lanius excubitor), several species of sparrow, and numerous others. Herptiles potentially found in the region include wandering garter snake (Thamnophis elegans vagrans), Great Basin gopher snake (Pituophis catenifer deserticola), Great Basin spadefoot toad (Scaphiopus intermontana), western whiptail (Cnemidophorus tigris), sagebrush lizard (Sceloporus graciosus), and shorthorned lizard (Phymosoma douglassii).

Although all of these species are important members of wildland ecosystems and communities, most are common and have wide distributions within the region. Consequently, the relationship of most of these species to the proposed project is not discussed in the same depth as species which are threatened, endangered, sensitive, of special economic interest, or are otherwise of high interest or unique value.

3.15.2 BIG GAME

Four resident big game species are commonly found in the Uinta Basin: pronghorn antelope, mule deer, Rocky Mountain bighorn sheep, and elk. Within the Project Area, the BLM’s 1985 RMP designated crucial yearlong mule deer habitat along the White River corridor, and identified the northern part of the greater Project Area as crucial pronghorn kidding habitat. These two species are discussed further below.

3.15.2.1 Pronghorn Antelope (Antilocapra americana)

Pronghorn typically inhabit grasslands and semi-desert shrublands of the western and southwestern United States. This species is most abundant in short and mixed grass habitats at elevations from 4,000 to 6,000 feet amsl. Pronghorn are typically less abundant in xeric habitats, preferring areas that average 12-15 inches of precipitation per year. Home ranges for pronghorn can vary between 400 and 5,600 acres, according to factors including season, habitat quality,
population characteristics, and local livestock occurrence. Typically, daily movements do not exceed 6 miles. Some pronghorn make seasonal migrations between summer and winter habitats, but these migrations are often triggered by availability of succulent plants and not local weather conditions (Fitzgerald et al. 1994)

Pronghorn antelope within the Project Area are associated with the Bonanza Herd Unit, which consists of about 80,900 acres. The 1985 Book Cliffs RMP identifies this unit as crucial antelope habitat. The proposed 8.38 mile linear ROW from the Deseret Generation and Transmission power plant (in section 35, T8S, R23E) to the existing Chapita Station (in section 15, T9S, R22E) would involve about 101.8 acres of this Unit, or less than 1 percent. The 1985 BLM RMP implements an information notice to enhance the management objective of increasing pronghorn numbers in the Unit. This information notice (IN5) states: “The lessee/operator is given notice that the area has been identified as crucial pronghorn habitat. Modifications may be required in the Surface Use Plan to protect pronghorn during the kidding period of May 15-June 20.” (refer to RMP figure 2-6).

3.15.2.2 Mule Deer (*Odocoileus hemionus*)

Mule deer occur throughout the western mountains, forests, deserts, and shrublands. Typical habitats include shortgrass and mixed-grass prairies, sagebrush and other shrublands, coniferous forests, and forested and shrubby riparian areas. The species is common State-wide in Utah, where it can be found in many types of habitat, ranging from open deserts to high mountains to urban areas. Mule deer usually are migratory, spending the warmer months at higher elevations. During this time mule deer prefer foraging on the succulent growth of forbs and the new twigs of trees and shrubs. As summer progresses and herbaceous plants mature and dry, the species’ diet shifts more toward woody browse. This diet then continues as deer are driven down to foothill areas in winter (Wilson and Ruff 1999). Fawn mortality is typically due to predation or starvation. Adult mortality often occurs from hunting, winter starvation, and automobile collisions. Predation occurs from coyotes, bobcats, golden eagles, mountain lions, and bears.

Mule deer may occur in the Project Area at any time; however, the 1985 Book Cliff RMP designated crucial yearlong habitat for mule deer for the riparian area associated with the White River. There is no planned development within the White River corridor, thus impacts to mule deer are not anticipated, and this species is not discussed further in this assessment.

3.15.3 SPECIAL STATUS ANIMAL SPECIES

3.15.3.1 Special Status Bird Species

Raptors

Some of the more common and visible birds within the Project Area include raptors, or birds of prey. The Project Area provides diverse breeding and foraging habitat for raptors: cool desert shrub communities, rocky outcrops, and riparian zones. Table 3-15 below identifies the raptor species with the potential to occur in the Project Area, and a description of typical nesting habitats.
Table 3-15. Raptor Species with the Potential to Occur in the Bonanza Project Area

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Nesting Habitats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Golden Eagle</td>
<td>Aquila chrysaetos</td>
<td>Cliff ledges and rock outcrops</td>
</tr>
<tr>
<td>Long-eared Owl</td>
<td>Asio otus</td>
<td>Coniferous and deciduous forests, and shrublands</td>
</tr>
<tr>
<td>Great-horned Owl</td>
<td>Bubo virginianus</td>
<td>Cliff ledges or nests of other species</td>
</tr>
<tr>
<td>Ferruginous Hawk</td>
<td>Buteo regalis</td>
<td>Ground, pinyon-juniper woodlands, balanced pinnacles</td>
</tr>
<tr>
<td>Red-tailed Hawk</td>
<td>Buteo jamaicensis</td>
<td>Cliff ledges, rock outcrops, aspen, pinyon-juniper woodlands, etc.</td>
</tr>
<tr>
<td>Swainson’s Hawk</td>
<td>Buteo swainsoni</td>
<td>Cottonwoods, spruce or serviceberry</td>
</tr>
<tr>
<td>Turkey Vulture</td>
<td>Cathartes aura</td>
<td>Rock outcrops, caves, and tree cavities</td>
</tr>
<tr>
<td>Prairie Falcon</td>
<td>Falco mexicanus</td>
<td>Cliff ledges</td>
</tr>
<tr>
<td>American Kestrel</td>
<td>Falco sparverius</td>
<td>Tree cavities, cliff crevices</td>
</tr>
<tr>
<td>Western Burrowing Owl</td>
<td>Athene cuniculara</td>
<td>Prairie dog colonies</td>
</tr>
</tbody>
</table>

All raptor species and their nests are protected from take or disturbance under the Migratory Bird Treaty Act of 1918 (MBTA) (16 U.S.C. 703 et seq.), as amended. Bald and golden eagles are also further protected under the Bald Eagle Protection Act of 1940 (16 U.S.C. 668-668d).

A review of BLM and UDWR records disclosed six documented raptor nests within the Project Area. However, there is potential nesting habitat throughout the Project Area. Based on numerous factors including habitat types, local resident species, known raptor phenology, and lack of comprehensive survey data, additional breeding raptors may have established or could establish territories/nests within the Project Area and/or within the one-mile buffer around the Project Area analyzed. Nest sites could occur on rock outcrops, on taller shrubs and trees, and in white-tailed prairie dog colonies.

Golden Eagle (Aquila chrysaetos)

The golden eagle is protected under the Bald and Golden Eagle Protection Act, based upon the similarity of the juvenile bald eagle’s physical appearance to that of the adult golden eagle. Throughout the summer, golden eagles are found in mountainous areas, canyons, shrub-land and grassland. During the winter they inhabit shrub-steppe vegetation, as well as wetlands, river systems and estuaries. Golden eagles are quite common to Uintah County and the Book Cliffs resource area. A single golden eagle nest has been identified within the Project Area.

Ferruginous Hawk (Buteo regalis)

The ferruginous hawk is a UDWR Species of Special Concern raptor. Within the State of Utah, ferruginous hawks nest on junipers, pinyon pines, cottonwoods, on the ground, on low hills and knolls, on low cliffs, and on artificial structures (UDWR 2004b). Generally, this species nests where visibility is extensive and this, in part, may contribute to the species’ relatively high sensitivity to human disturbance (Collins and Reynolds 2005). Ferruginous hawks lay eggs from
mid-March through early April and the young fledge from early June to early July (UDWR 2004b). The ferruginous hawk is particularly susceptible to human-caused disturbances during courtship and incubation periods.

In areas similar to the Project Area, ferruginous hawk stick nests are typically located on rock outcrops and low cliffs elevated from the surrounding terrain, as well as in isolated junipers. Although no ferruginous hawk nests have been identified within the Project Area, there is potential nesting habitat found throughout the Project Area. Given the availability of potential foraging and nesting habitat, the ferruginous hawk could occur in portions of the Project Area.

Swainson’s Hawk (Buteo swainsoni)

The Swainson's hawk is on the State of Utah Sensitive Species list. In Utah, the species is found Statewide, though primarily at mid-elevations in the western and northern parts of the State, in shrub and grassland habitats. Whereas breeding birds feed chiefly on small vertebrate prey, especially ground squirrels, insects are the primary component of the diet during non-breeding periods. Nests are typically in solitary trees or bushes; in the West Desert of Utah, nests are often in junipers and are often used for several years (UDWR 2006). Nesting sites tend to be absent from high-elevation montane habitats and low-elevation desert flats. Occupied habitat includes sagebrush steppe, juniper stands, grasslands, and agricultural lands and nests are also frequently in lowland riparian habitat. Potential nesting habitat for the Swainson’s hawk occurs in the Project Area along the White River. The entire Project Area could be used as potential foraging habitat.

Western Burrowing Owl (Athene cunicularia)

The western burrowing owl is a UDWR Species of Special Concern. Western burrowing owls are summer residents on the plains over much of Utah and usually arrive on breeding grounds from late March to mid-April. The species is associated with dry, open habitat that has short vegetation and contains an abundance of burrows (Klute et al. 2003). In Utah, prairie dog burrows are the most important source of western burrowing owl nest sites. Western burrowing owl use of abandoned prairie dog towns is minimal, and active dog towns are the primary habitat for the owls (Butts and Lewis 1982). As the range and abundance of these burrowing mammals have decreased, so too has the western burrowing owl. No burrowing owl nests have been identified within the Project Area, however, there are scattered prairie dog colonies throughout portions of the Project Area. Therefore, the burrowing owl has the potential to occur there.

Greater Sage-grouse (Centrocercus urophasianus)

The greater sage-grouse is an important game bird found in the Uinta Basin. Greater sage-grouse, as the name implies, are restricted to sagebrush habitats. The greater sage-grouse is considered a Species of Special Concern because of widespread losses of sagebrush habitat throughout the western States including Utah. Since 1967, the abundance of male grouse attending breeding grounds in Utah has declined by approximately 50 percent. Brood counts and harvest data show similar trends.

Greater sage-grouse habitat is primarily located in the sagebrush community and can be found throughout the Uinta Basin. UDWR data has identified brooding habitat to the north and east of the greater Project Area. Based on this information about 96 acres of brooding sage grouse habitat would be involved along the proposed linear powerline ROW from Deseret Generation and Transmission power plant to the existing Chapita station. Neither BLM or UDWR have
identified any leks in the greater Project Area. Existing BLM direction provides that surface disturbance related to mineral activities--exploration, drilling, and other development--would be allowed only during the period from June 15 to March 15, and no drilling or storage facilities would be allowed within 300 feet of the sage grouse leks (BLM 1985).

Migratory Birds

The MBTA makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products. In addition to the MBTA, Executive Order 13186 sets forth the responsibilities of federal agencies to further implement the provisions of the MBTA by integrating bird conservation principles and practices into agency activities and by ensuring that federal actions evaluate the effects of actions and agency plans on migratory birds.

Numerous migratory bird species occupy the Project Area. Those migratory bird species that are federally listed under the ESA, or listed as Sensitive by the BLM, are discussed further in species-specific sections above. This section addresses migratory birds that may inhabit the greater Project Area, including those species classified as High-Priority birds by Partners in Flight. High-Priority species are denoted by an asterisk (*)

Avian species commonly associated with the sagebrush/desert shrub communities include the horned lark (Eremophila alpestris), sage sparrow (Amphispiza belli), vesper sparrow (Poecetes gramineus), black-throated sparrow (Amphispiza bilineata), sage thrasher* (Oreoscoptes montanus), Brewer’s sparrow* (Spizella breweri), western kingbird (Tyrannus verticalis), Say’s phoebe (Sayornis saya), prairie falcon, and Swainson’s hawk.

**Common Yellowthroat (Geothlypis trichas)**

The common yellowthroat is included on the Utah BLM’s Sensitive Species list. The species occurs in Utah during the breeding and nesting season, but is declining throughout the State due to loss of riparian habitats. Preferred habitats include riparian corridors, marshes, brushy pastures, and old fields. The diet of the common yellowthroat is composed almost exclusively of spiders and insects. Breeding begins in the late spring. Nests are constructed by the female, generally in riparian vegetation or weeds and other shrubs. Nests are commonly parasitized by brown-headed cowbirds, another cause of the species decline (UDWR 2006). Suitable nesting habitat occurs in the Project Area within the riparian habitats along the White River.

**Lewis’ Woodpecker (Melanerpes lewis)**

The Lewis’s woodpecker is included on the State of Utah Sensitive Species list. The species is a cavity nester, excavating a hole in tall trees, often dead or blackened by fire. It will also nest in utility poles, or stumps, but prefers ponderosa pine, cottonwood, or sycamore. The diet of this woodpecker consists of insects during the breeding season and nuts and berries during the winter. The major breeding habitat consists of open park-like ponderosa pine forests. The Lewis's woodpecker is attracted to burned-over Douglas-fir, mixed conifer, pinyon-juniper, riparian, and oak woodlands, but is also found in the fringes of pine and juniper stands, and deciduous forests, especially riparian cottonwoods. Areas with a good under-story of grasses and shrubs to support insect prey populations are preferred. Dead trees and stumps are required for nesting (UDWR 2006). Important breeding habitats comprise ponderosa pine, mountain shrub, and riparian assemblages (Bosworth 2003). Potential nesting and foraging habitat for the Lewis’s woodpecker occurs in the Project Area along the White River.
Blue Grosbeak (Passerina caerulea)

The blue grosbeak is on the State of Utah Sensitive Species list. In Utah, the blue grosbeak breeds in the southern (especially the southeastern) portion of the State. The blue grosbeak is typically found in habitats with scattered trees, riparian woodlands, scrub, or woodland edges (UDWR 2006). Often, these birds are associated with the edges of lowland riparian habitat and nest in dense vegetation surrounded by open habitat (Kingery 1998). Blue grosbeaks may be present in the Project Area in riparian areas along the White River.

3.15.3.2 Special Status Mammal Species

White-tailed Prairie Dog (Cynomys Leucurus)

The white-tailed prairie dog is a UDWR Species of Concern. In Utah, white-tailed prairie dogs occur in the eastern portion of the State, primarily in the Uinta Basin and the northern portion of the Colorado Plateau. Range-wide, the white-tailed prairie dog population is estimated at 1-2 million individuals (Knowles 2002). In northeastern Utah, the species occurs in areas around Flaming Gorge/Manila, Diamond Mountain, and in the Uinta Basin. To date, about 87.5 percent of the 100,000 acres of active prairie dog colonies have been surveyed in UDWR’s Northeast Region. The northern portion of the Project Area near Kennedy Wash, has been surveyed and colonies mapped and studied. Small, scattered colonies occur throughout the Project Area; however, these colonies have yet to be scientifically surveyed.

White-tailed prairie dogs inhabit mountain valleys, semi-desert grasslands, agricultural areas, and open shrublands in Western North America (Fitzgerald et al. 1994, Hall 1981). They are distributed in relatively large, sparsely populated complexes and live in loosely knit family groups or “clans” (Tileston and Lechleitner 1966).

The main threat to white-tailed prairie dog populations has been the introduction of sylvatic plague (Yersinia pestis) into North America in the late 1930’s (Lechleitner et al. 1968). Prairie dogs appear to have little immunity to this disease, and plague epizootics frequently kill greater than 99 percent of prairie dogs in infected colonies (Cully and Williams 2001). Other threats include oil, gas, and mineral extraction, urbanization, conversion of land to agriculture, and federal and State sponsored eradication campaigns. Recreational shooting pressure is capable of reducing prairie dog numbers on a local scale, in conjunction with outbreaks of sylvatic plague. However, it has not been documented to threaten population stability alone (Knowles 2002).

BLM records do not indicate white-tailed prairie dog colonies within the Project Area. However, field reconnaissance has identified numerous small colonies throughout portions of the Project Area.

Spotted Bat (Euderma maculatum)

The spotted bat is listed as a Utah State Sensitive Species. This species is broadly distributed throughout eastern and southern Utah. Within Utah, the majority of records are from deep, narrow, rocky canyons, particularly those bounded by precipitous cliff faces. Crevices in cliff walls are the primary roosting sites. Individuals forage over open sagebrush steppe, desert scrub, or montane meadow habitat, sometimes considerable distances from roosting habitat. Based on echolocation calls, foraging spotted bats tend to be sparsely dispersed, but population sizes and
trends are not known (Bosworth 2003). Potential cliff nesting habitat and foraging habitat exists within the Project Area, therefore the spotted bat has the potential to occur there.

3.15.3.3 Special Status Fish Species

Roundtail Chub (*Gila robusta*)

The roundtail chub is Utah Conservation Agreement Species that is found in the Upper Colorado River Basin. This species is a large member of the minnow family found most often in major rivers and smaller tributary streams. Although movement patterns are poorly understood, the roundtail chub has been alternately described as sedentary and mobile, depending on life stage and habitat conditions. Roundtail chubs typically mature from ages three to five, and fecundity varies with fish from as low as 1,000 eggs to over 40,000 eggs per female (UDWR 2006).

Extant roundtail chub populations include the Green River from the Colorado River confluence upstream to Echo Park and in the White River from the Green River confluence upstream to near Meeker, Colorado. The roundtail chub now occupies approximately 45 percent of its historical range in the Colorado River Basin. In the Upper Colorado River Basin (New Mexico, Utah, Colorado and Wyoming), it has been extirpated from approximately 45 percent of its historical range, including the Price River and portions of the San Juan, Gunnison and Green Rivers. Data on smaller tributary systems are largely unavailable, and population abundance estimates are available only for short, isolated river reaches (UDWR 2006).

Flannelmouth Sucker (*Catostomus latipinnis*)

The flannelmouth sucker is a Utah Conservation Agreement Species found in the Upper Colorado River Basin. Flannelmouth suckers typically inhabit deep water habitats of large rivers, but are also found in small streams and occasionally in lakes. Flannelmouth typically spawn during March and April in the southern portions of Utah and from May to June in the North and higher elevations. Fecundity of females is proportional to fish size and varies with environmental conditions (UDWR 2006).

Extant flannelmouth sucker populations include the Green River from the Colorado River confluence upstream to Flaming Gorge Reservoir, and the White River from the Green River confluence to Kenny Reservoir, Colorado. Recent investigations of historical accounts, museum specimens, and comparison with recent observations indicate that flannelmouth suckers occupy approximately 50% of their historic range in the Upper Colorado River Basin (Utah, Wyoming, Colorado, and New Mexico). Populations have declined since the 1960s due to impoundment of the mainstream Green River in Wyoming and Utah (Flaming Gorge Reservoir) and the Colorado River in Glen Canyon, Utah (Lake Powell) (UDWR 2006).

Bluehead Sucker (*Catostomus discobolus*)

The bluehead sucker is a Utah Conservation Agreement Species found in the Upper Colorado River Basin. Bluehead suckers occur in small to large streams and rivers and tributaries in the Upper and Lower Colorado River Basin and in the Weber and Bear River drainages in the Bonneville basin. Large adult bluehead may inhabit stream environments as deep as two to three meters, although they most commonly feed in riffles and swift runs. Life expectancy is typically six to eight years. Spawning occurs in spring and early summer at lower elevations and mid- to late summer in higher, colder waters. Spawning occurs on gravel beds in shallow water (UDWR 2006).
Bluehead suckers historically occurred in the Colorado River Basin above the mouth of the Grand Canyon in mainstream and tributary habitats. In Utah, bluehead suckers continue to be found in mainstream rivers and tributary streams above Glen Canyon Dam to headwater reaches of the Green and Colorado rivers. Populations currently occur in the mainstream Green River from the Colorado River confluence upstream to Lodore, Colorado, and in the White River from the Green River confluence upstream to Meeker, Colorado. In the upper Colorado River Basin (Utah, Wyoming, Colorado, and New Mexico), bluehead suckers currently occupy approximately 45 percent of their historical habitat. Recent declines of the species have occurred in the White River below Taylor Draw Dam, and in the upper Green River (UDWR 2006).

3.15.3.4 Special Status Reptile Species

The smooth greensnake is currently a State sensitive species. It is patchily distributed throughout the northeastern and western United States, southeastern Canada, and parts of Texas and Mexico. In Utah, the species occurs in the Wasatch, Uinta, and Abajo Counties and the La Sal Mountains. The smooth greensnake is uncommon in Utah.

The smooth greensnake eats terrestrial invertebrates, chiefly insects and spiders. Females of the species lay an average of four to nine eggs in mid- to late summer. Eggs hatch several days to one month after laying. The smooth greensnake prefers moist areas, especially moist grassy areas and meadows where the snake is camouflaged due to its solid green dorsal coloration. Like many other snakes, the species is active during the spring, summer, and fall, but hibernates during the cold winter months. Habitat within the Project Area would be limited to the riparian areas associated with the White River.

3.16 SOIL RESOURCES

The development of soils is governed by many factors, including climatic conditions (the amount and timing of precipitation, temperature, and wind), the parent material that the soil is derived from, topographic position (slope, elevation, and aspect), and vegetation type and cover. For evaluation of potential environmental impacts to soils, the key attributes are their erosion potential and ease of reclamation after soil disturbance. Erosion potential can vary widely among soil units within a given area, and is dependent on the particle size distribution of the soil, the slopes on which it is found, and the amount and type of vegetative cover. Reclamation potential is dependent on the soil structure, pH conditions, and soil salinity. Excessive salinity (salt content), acidity, or alkalinity can inhibit the growth of desirable vegetation. Soil mapping conducted by the US Department of Agriculture (USDA) typically provides information about each soil type within the mapped area that can be used to evaluate the erosion potential and reclamation potential of each soil unit.

3.16.1 PROJECT AREA SOILS

There are 13 soil complexes within the Bonanza Project Area, as shown in Figure 5 in Appendix D (USDA-NRCS 2003). Each of these soil complexes is composed of one or more soil types that are found in close association with each other. Table 3-13 summarizes the soil types that make up the 13 soil complexes occurring in the Project Area. This table includes values for the specific characteristics associated with erosion and reclamation potential.
No soil units contain soils that have clay content greater than 60%, and no soils have estimated erosion factors of over 5 tons/acre/year. However, three soil complexes (map units 12, 14, and 36) contain soils that occur on slopes greater than 40%.

Of the 13 soil complexes involved with the Project Area, 12 soil complexes exhibit characteristics that may inhibit successful reclamation. Eight soil complexes have components that are classified as hydrologic Group D; 6 soil complexes contain soils that have both high alkalinity (pH > 9) and high salinity (> 9 mmhos/cm); 2 soil complexes have high alkalinity; and, two soil complexes have high salinity. Only the Green River-Fluvaquents soil complex, involving about 125 acres or less than 1 percent of the Project Area, exhibits characteristics that may afford successful reclamation.
### Table 3-16. Soil Characteristics of the Bonanza Project Area

<table>
<thead>
<tr>
<th>Map Unit</th>
<th>Soil Complex Name</th>
<th>Acreage in Project Area</th>
<th>Soil Unit Name</th>
<th>Soil Type</th>
<th>Percent of complex (%)</th>
<th>Landforms</th>
<th>Distance to Bedrock</th>
<th>Slope</th>
<th>pH Range</th>
<th>Max Salinity (mmhos/cm)</th>
<th>Clay Content (%)</th>
<th>Hydro. Group</th>
<th>Erosion K Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Badland-Rock Outcrop complex</td>
<td>1,552.7 ac</td>
<td>Badland</td>
<td>Badland</td>
<td>50%</td>
<td>Erosion remnant, ridge, hill</td>
<td>0 to 2 inches</td>
<td>1 to 75%</td>
<td>7.9-11</td>
<td>20</td>
<td>40-60</td>
<td>D</td>
<td>.10</td>
</tr>
<tr>
<td></td>
<td>Rock Outcrop</td>
<td>Bedrock</td>
<td>35%</td>
<td>Hill</td>
<td>0 inches</td>
<td>1 to 100%</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>D</td>
<td>NR</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Badland-Tipperary association</td>
<td></td>
<td>Badland</td>
<td>Badland</td>
<td>66%</td>
<td>Erosion remnant, ridge, hill</td>
<td>0 to 2 inches</td>
<td>1-8%</td>
<td>7.9-11</td>
<td>20</td>
<td>40-60</td>
<td>D</td>
<td>.10</td>
</tr>
<tr>
<td></td>
<td>Tipperary</td>
<td>Loamy fine sand</td>
<td>25%</td>
<td>Structural bench</td>
<td>&gt; 60 inches</td>
<td>1-8%</td>
<td>7.9-9.0</td>
<td>2</td>
<td>0-8</td>
<td>A</td>
<td>.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Badland-Walknolls-Rock Outcrop complex</td>
<td>434.2 ac</td>
<td>Badland</td>
<td>Badland</td>
<td>50%</td>
<td>Erosion remnant, ridge, hill</td>
<td>0 to 2 inches</td>
<td>50 to 90%</td>
<td>7.9-11</td>
<td>20</td>
<td>40-60</td>
<td>D</td>
<td>.10</td>
</tr>
<tr>
<td></td>
<td>Walknolls</td>
<td>Very channery loam</td>
<td>35%</td>
<td>Hill</td>
<td>8 to 20 inches</td>
<td>50 to 90%</td>
<td>7.9-9</td>
<td>2</td>
<td>10-20</td>
<td>D</td>
<td>.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rock Outcrop</td>
<td>Bedrock</td>
<td>10%</td>
<td>Cliff, erosion remnant, escarpment, ledge</td>
<td>0 inches</td>
<td>50 to 90%</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>D</td>
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<td></td>
</tr>
<tr>
<td>33</td>
<td>Cadrina association</td>
<td>26.8 ac</td>
<td>Cadrina</td>
<td>Extremely Channery Loam</td>
<td>55%</td>
<td>Hill</td>
<td>5 to 20 inches</td>
<td>4 to 25%</td>
<td>7.9-9</td>
<td>4</td>
<td>18-27</td>
<td>D</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Cadrina</td>
<td>Extremely Stony Loam</td>
<td>30%</td>
<td>Hill</td>
<td>5 to 20 inches</td>
<td>2 to 25%</td>
<td>7.9-9</td>
<td>4</td>
<td>18-27</td>
<td>D</td>
<td>.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Cadrina extremely stony loam – Rock outcrop complex</td>
<td>2,564.3 ac</td>
<td>Cadrina</td>
<td>Extremely stony loam</td>
<td>65%</td>
<td>Hill</td>
<td>5 to 20 inches</td>
<td>25 to 50%</td>
<td>7.9-9</td>
<td>4</td>
<td>18-27</td>
<td>D</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Rock Outcrop</td>
<td>Bedrock</td>
<td>20%</td>
<td>Cliff, erosion remnant, escarpment, ledge</td>
<td>0 inches</td>
<td>25 to 50%</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>D</td>
<td>NR</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Cadrina-Cosmos-Rock Outcrop complex</td>
<td>3,600.6 ac</td>
<td>Cadrina</td>
<td>Extremely stony loam</td>
<td>40%</td>
<td>Hill</td>
<td>5 to 20 inches</td>
<td>2 to 25%</td>
<td>7.9-9</td>
<td>4</td>
<td>18-27</td>
<td>D</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Cosmos</td>
<td>Channery loam</td>
<td>30%</td>
<td>Hill</td>
<td>5 to 20 inches</td>
<td>2 to 40%</td>
<td>7.9-9</td>
<td>4</td>
<td>18-27</td>
<td>D</td>
<td>.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rock Outcrop</td>
<td>Bedrock</td>
<td>15%</td>
<td>Cliff, erosion remnant, escarpment, ledge</td>
<td>0 inches</td>
<td>2 to 25%</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>D</td>
<td>NR</td>
<td></td>
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### Affected Environment

<table>
<thead>
<tr>
<th>Map Unit</th>
<th>Soil Complex Name</th>
<th>Acreage in Project Area</th>
<th>Soil Unit Name</th>
<th>Soil Type</th>
<th>Percent of complex (%)</th>
<th>Landforms</th>
<th>Distance to Bedrock</th>
<th>Slope</th>
<th>pH Range</th>
<th>Max Salinity (mmhos/cm)</th>
<th>Clay Content (%)</th>
<th>Hydro. Group</th>
<th>Erosion K Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>79</td>
<td>Gilston-Chalkcliff association</td>
<td>131.0 ac</td>
<td>Gilston</td>
<td>Sandy loam, Gravelly sandy loam</td>
<td>50%</td>
<td>Drainageway</td>
<td>&gt; 60 inches</td>
<td>2 to 8%</td>
<td>7.9-11</td>
<td>16</td>
<td>5-18</td>
<td>B</td>
<td>.28</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chalkcliff</td>
<td>Channery loam</td>
<td>40%</td>
<td>Fan remnant</td>
<td>&gt; 60 inches</td>
<td>2 to 25%</td>
<td>7.9-11</td>
<td>2</td>
<td>18-27</td>
<td>B</td>
<td>.15</td>
</tr>
<tr>
<td>80</td>
<td>Gilston-Muff-Cadrina, cool complex</td>
<td>131.0 ac</td>
<td>Gilston</td>
<td>Sandy loam</td>
<td>30%</td>
<td>Drainageway</td>
<td>&gt; 60 inches</td>
<td>2-8%</td>
<td>7.9-11</td>
<td>16</td>
<td>5-18</td>
<td>B</td>
<td>.28</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Muff</td>
<td>Sandy clay loam</td>
<td>30%</td>
<td>Strath terrace</td>
<td>20 to 40 inches</td>
<td>1-4%</td>
<td>8.5-11</td>
<td>8</td>
<td>25-34</td>
<td>C</td>
<td>.43</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cadrina, cool</td>
<td>Extremely channery loam</td>
<td>30%</td>
<td>Hill</td>
<td>5 to 20 inches</td>
<td>4-25%</td>
<td>7.9-9.0</td>
<td>4</td>
<td>18-27</td>
<td>D</td>
<td>.05</td>
</tr>
<tr>
<td>90</td>
<td>Green River-Fluvaquents complex</td>
<td>124.5 ac</td>
<td>Green River</td>
<td>Fine sandy loam</td>
<td>70%</td>
<td>Floodplain</td>
<td>&gt; 60 inches</td>
<td>0 to 2%</td>
<td>7.9-9</td>
<td>8</td>
<td>5-19</td>
<td>C</td>
<td>.37</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fluvaquents</td>
<td>Fine sand</td>
<td>15%</td>
<td>Floodplain, oxbow</td>
<td>&gt; 60 inches</td>
<td>0 to 2%</td>
<td>6.6-8.4</td>
<td>2</td>
<td>0-27</td>
<td>C</td>
<td>.20</td>
</tr>
<tr>
<td>120</td>
<td>Jenrid sandy loam</td>
<td>34.4 ac</td>
<td>Jenrid</td>
<td>Sandy loam</td>
<td>85%</td>
<td>Alluvial flats</td>
<td>&gt; 60 inches</td>
<td>0 to 2%</td>
<td>7.9-11</td>
<td>16</td>
<td>10-18</td>
<td>B</td>
<td>.28</td>
</tr>
<tr>
<td>121</td>
<td>Jenrid-Eghlem complex</td>
<td>34.4 ac</td>
<td>Jenrid</td>
<td>Sandy loam</td>
<td>60%</td>
<td>Alluvial flats</td>
<td>&gt; 60 inches</td>
<td>0 to 2%</td>
<td>7.9-11</td>
<td>16</td>
<td>10-18</td>
<td>B</td>
<td>.28</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eghlem</td>
<td>Silt sandy loam</td>
<td>25%</td>
<td>Floodplain</td>
<td>&gt; 60 inches</td>
<td>1 to 3%</td>
<td>7.9-8.4</td>
<td>4</td>
<td>2-27</td>
<td>B</td>
<td>.49</td>
</tr>
<tr>
<td>159</td>
<td>Muff-Cadrina, Cool association</td>
<td>3,669.0 ac</td>
<td>Muff</td>
<td>Clay loam</td>
<td>50%</td>
<td>Strath terrace</td>
<td>20 to 40 inches</td>
<td>1 to 4%</td>
<td>9.1-11</td>
<td>8</td>
<td>25-34</td>
<td>C</td>
<td>.43</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cadrina, Cool</td>
<td>Extremely channery loam</td>
<td>35%</td>
<td>Hill</td>
<td>5 to 20 inches</td>
<td>4 to 25%</td>
<td>7.9-9</td>
<td>4</td>
<td>18-27</td>
<td>D</td>
<td>.05</td>
</tr>
<tr>
<td>241</td>
<td>Turzo complex</td>
<td>3,669.0 ac</td>
<td>Turzo, loam</td>
<td>Silty clay loam</td>
<td>60%</td>
<td>Alluvial flats</td>
<td>&gt; 60 inches</td>
<td>2 to 4%</td>
<td>8.5-9.0</td>
<td>16</td>
<td>18-35</td>
<td>B</td>
<td>.37</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Turzo, clay</td>
<td>Clay loam</td>
<td>25%</td>
<td>Alluvial flats</td>
<td>&gt; 60 inches</td>
<td>2 to 4%</td>
<td>7.9-9.0</td>
<td>2</td>
<td>18-35</td>
<td>B</td>
<td>.37</td>
</tr>
</tbody>
</table>

Source: [https://websoilsurvey.nrcs.usda.gov](https://websoilsurvey.nrcs.usda.gov)
3.17 RECREATION

The Bonanza Project Area is located primarily on public lands administered by the BLM. Interspersed throughout the Project Area are also State lands, managed by SITLA, Tribal lands, associated with the Uintah and Ouray Indian Reservation, and private lands. Access to the Project Area is circuitous, which limits recreational use. From the north, the main access route to the Project Area is Highway 45. From the northwest, Highway 88 provides primary access. Each of these highways intersects Fidlar Road, to the north of the Project Area, which then intersects two local roads, Seven Sisters Road and the North Achees Wash Road. These local roads provide access into the Project Area and connect to an extended unpaved road network servicing existing development throughout the area. These roads, along with existing oil and gas facilities, livestock management facilities, and other man-made features throughout much of the Project Area, have reduced the natural character for visitors who seek relatively pristine landscapes.

Recreational use of lands within the Project Area is best characterized as dispersed; there are no developed recreation sites or facilities. Most recreation activities in the area occur during the fall hunting season. Pronghorn are the primary species hunted. Mule deer, elk, and rabbits are also hunted to a lesser degree. Within the Book Cliffs Extended Recreation Management Area (ERMA) as a whole, approximately 6,800 visitor days, or 48 percent of the total recreational use, is attributable to hunting (BLM 1984). During other seasons of the year, the area attracts a limited number of recreationists engaged in rock collecting, camping and hiking, wildlife observation, outdoor photography, and picnicking. The area also accommodates a limited amount of use by off-road-vehicle enthusiasts given the extended road network. Although statistical data on recreational visitation are not available, overall use levels are generally low, relative to other prominent recreation areas in the region such as Dinosaur National Monument, Flaming Gorge National Recreation Area, and Fantasy Canyon. Low visitation is a function of the circuitous access to the area, long drives from major population centers, lack of developed facilities, and road conditions that limit vehicle access into many back country areas.

The White River, which is located to the south of the Project Area and crosses into the Project Area along the southeast and southwest corners, is a popular destination for recreational visitors. Fishing, river rafting, canoeing, boating, and wildlife viewing are all popular recreational uses of the river, which receives approximately 2,000 visitors per year (BLM 2005). Access to the river within and from the Project Area is extremely limited. Primary access to the river is located approximately nine miles northeast of the Project Area at the Bonanza Bridge. Portions of the White River have also been evaluated as being eligible for Wild and Scenic River designation.

3.18 VISUAL RESOURCES

Canyons, ridges, cliffs, and plateaus dominate the visual landscape of the Bonanza Project Area. The White River, which runs east to west along the southern edge of the Project Area, forms the major canyon. Smaller side canyons branch from the White River canyon along the various tributaries from the river. The plateaus to the north of the river are dominated by desert shrub communities supporting saltbush, sagebrush, rabbit brush, and various other shrubs, grasses, and forbs. Side canyon bottoms are also dominated by sagebrush and rabbit brush, along with greasewood and grasses. Cottonwood trees and other riparian plants dominate the White River Canyon itself. The variable topography and vegetative cover combine to provide a wide variety of form, line, and color, resulting in strong visual contrast.
The Project Area falls within an active oil and gas area. As such, numerous well pads, ancillary facilities, access roads, and surface pipelines have modified the natural character of the Project Area.

The BLM is directed to manage public lands in a manner that will protect the quality of the visual (scenic) values in accordance with section 102(a)(8) of the FLPMA. The BLM Visual Resource Management (VRM) system is used to inventory, manage, and set objectives for visual resources. Public lands managed by BLM within the Project Area have been classified according to the VRM system. Tribal, SITLA, and private lands within VRM areas are not explicitly managed for visual resource protection.

As part of the VRM system, visual management classes are identified that designate permissible levels of landscape alteration with the goal of protecting the overall visual quality of public lands. Visual management classes are as follows:

- **Class I Objective:** To preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention.

- **Class II Objective:** To retain the existing character of the landscape. The level of change to the characteristic landscape should be low.

- **Class III Objective:** To partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate.

- **Class IV Objective:** To provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high (BLM 2002).

The VRM system provides a means to identify visual (scenic) values; establish objectives for managing those values; evaluate whether surface disturbing activities may be in conflict with assigned objectives; and determine mitigation measures when necessary.

Existing VRM class designations are shown in Figure 6, Appendix D. Approximately 80 percent (10,158 acres) of the lands in the greater Project Area, fall within VRM Class IV designated areas. The level of change to the characteristic landscape in these areas can be high. Management actions within VRM Class IV may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of activities in areas through careful location, minimal surface disturbance, and repeating the basic landscape elements. Lands designated as VRM Class IV constitute about 80 percent of the Project Area (10,129 acres).

Approximately 20 percent (2,543 acres) of the lands located along the White River corridor in the southern portion of the Project Area is designated Class II. This area is designated VRM Class II because it is within the viewshed of recreational users on the White River. The management objective of Class II areas is to retain the existing character with a low level of change to the landscape. Management activities with VRM Class II areas should not attract attention and should not dominate the view of the casual observer.
3.19 MINERAL RESOURCES/ENERGY PRODUCTION

3.19.1 MINERAL RESOURCES

A review of the BLM’s LR2000 data base (http://www.blm.gov/landandresourcesreports) revealed no existing or pending mining claims within the greater Project Area. (BLM 2006b).

3.19.2 OIL AND GAS

There are approximately 197 approved, producing, or abandoned natural gas wells in the Project Area. In conjunction with the ongoing gas production, there are 62 miles of existing road network, numerous aboveground and buried pipelines, and four compressor stations. Routine operation and maintenance activities associated with existing gas exploration and production generates the majority of vehicle traffic and human activity within the Project Area. Table 3-17 provides a list of existing wells and their current status.

<table>
<thead>
<tr>
<th>Well Status</th>
<th>Number of Wells</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shut-In</td>
<td>11</td>
</tr>
<tr>
<td>Approved permit (APD); not yet spudded</td>
<td>58</td>
</tr>
<tr>
<td>Producing</td>
<td>75</td>
</tr>
<tr>
<td>Plugged and Abandoned</td>
<td>13</td>
</tr>
<tr>
<td>Location Abandoned</td>
<td>22</td>
</tr>
<tr>
<td>Spudded (Drilling commenced: Not yet completed)</td>
<td>9</td>
</tr>
<tr>
<td>Active (this is a water disposal well)</td>
<td>1</td>
</tr>
<tr>
<td>New Permit (Not yet approved or drilled)</td>
<td>6</td>
</tr>
<tr>
<td>Temporarily Abandoned</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total Wells</strong></td>
<td><strong>197</strong></td>
</tr>
</tbody>
</table>

Source: UDOGM. 2006.

3.20 PALEONTOLOGY

The BLM (1998, 2003) classifies areas of public land based on their potential to contain vertebrate fossils, noteworthy invertebrate fossils, or noteworthy plant fossils. Based on identification and analysis of surficial (surface) geology, areas are also classified according to their general likelihood of containing fossils. Conditions identified include: Condition 1: Areas that are known to contain fossil localities. Condition 2: Areas with exposure of geological units or settings which are likely to contain fossils. Condition 3: Areas that are very unlikely to produce fossils. Condition 1 or Condition 2 could initiate formal analysis of existing data, prior to authorizing land use actions involving surface disturbances.

The entire Project Area is underlain by bedrock of the Uinta and Green River formations, both considered by BLM to be Condition 1 for fossil sensitivity. Soils are generally less than 50 cm deep, and bedrock outcroppings are found throughout the Project Area.

In keeping with the historical policies adopted by the BLM, these classification guidelines apply primarily to vertebrate fossils, however, where noteworthy occurrences of invertebrate or plant...
3.0 – Affected Environment

fossils are known or expected, the same procedures are generally followed and do not require protection or salvage operations.

A review of previously documented paleontological localities within the Project Area was completed by Montgomery Archeological Consultants, Inc. (MOAC) in February of 2006. This review identified a total of 95 paleontological localities. Previous studies resulted in the identification of a variety of vertebrate (mammal and reptile) fossils within the Wagonhound and Myton Members of the Uinta and within the Brennan Basin Member of the Duchesne River Formations.

3.21 SOCIOECONOMIC RESOURCES

The Bonanza Project Area is located in Uintah County largely within Township 10 South, Range 23 East. The Project Area contains 12,698 acres, or less than one percent of the County land area. Uintah County and the State of Utah constitute the study area for the socioeconomic analysis in this EA. The municipalities and taxing districts that provide public facilities and services to the Project Area are also considered.

3.21.1 DEMOGRAPHICS

Over the last 30 years, the communities in Uintah County have experienced varying degrees of population growth or decline in response to changes in the economy and in the energy industry in particular. From the 1970s through 1983 the population of Uintah County grew steadily, then declined gradually from 1983 through 1989, and finally began a trend of re-growth in the 1990’s that continues today. This fluctuation has mirrored the price fluctuations and employment trends seen in the energy sector in the County. It is projected that this growth will continue into the future, with gradual population increases forecasted into the year 2020 (Utah Department of Workforce Services 2006).

The key population center within a reasonable commuting distance of the Project Area is the city of Vernal to the north of the Project Area. In July of 2005, Uintah County as a whole had a population of 26,995 (GOPB 2006). The City of Vernal comprised approximately 30 percent of the population with 7,939 residents (U.S. Census Bureau 2006). The remainder of Uintah County’s population is concentrated along Highway 40 and to the north in unincorporated communities. The Project Area is located south of the more populated part of the County.

In terms of racial composition, approximately 23,825 residents or 89 percent of Uintah County’s population is Caucasian, 2,427 residents or ten percent is Native American (largely residing on the Uintah and Ouray Indian Reservation), and the remaining one percent is composed of other ethnicities (GOPB 2006).

3.21.2 LOCAL ECONOMY AND EMPLOYMENT

As previously mentioned, Uintah County has experienced broad economic swings over the last 30 years. The local economy has historically been, and remains, heavily dependent on the oil and gas industry. Economic conditions in Uintah County continue to mirror the State of that industry. Education, health services, leisure, and hospitality industries have added to Uintah County’s economic diversification in recent years (Utah Department of Workforce Services 2006).
Major sources of employment in Uintah County include the mining and oil and gas industries; local, State, and federal government; wholesale and retail trade; and services (GOPB 2006). Table 3-18 below provides a breakdown of nonagricultural sources of employment by economic sector in Uintah County.

Table 3-18. Sources of Employment in Uintah County by Sector

<table>
<thead>
<tr>
<th>Employment Sector</th>
<th>Number of Jobs</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining, Oil and Gas</td>
<td>2,029</td>
<td>18.6</td>
</tr>
<tr>
<td>Construction</td>
<td>614</td>
<td>5.6</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>173</td>
<td>1.6</td>
</tr>
<tr>
<td>Trade, Transportation, and Utilities</td>
<td>2,337</td>
<td>21.8</td>
</tr>
<tr>
<td>Information Services</td>
<td>126</td>
<td>1.6</td>
</tr>
<tr>
<td>Financial Activity</td>
<td>384</td>
<td>3.5</td>
</tr>
<tr>
<td>Professional and Business</td>
<td>531</td>
<td>4.9</td>
</tr>
<tr>
<td>Education and Health</td>
<td>821</td>
<td>7.5</td>
</tr>
<tr>
<td>Leisure and Hospitality</td>
<td>918</td>
<td>8.4</td>
</tr>
<tr>
<td>Other Services</td>
<td>325</td>
<td>3.0</td>
</tr>
<tr>
<td>Government</td>
<td>2,563</td>
<td>23.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10,884</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Source: Utah Governor’s Office of Planning and Budget (GOPB), 2006.

As of March 2004, the unemployment rate in Uintah County was 5.4 percent, which was comparable to the State of Utah and United States as a whole at 5.2 and 5.5 percent unemployment, respectively (GOPB, 2006).

Uintah County’s per capita income of $22,313 ranks 15th out of 29 counties within the State of Utah. The County’s average is about 83 percent of State average of $26,946, and 67 percent of the national average of 33,041. Due to the prevalence of the oil and gas development the average per capita income in Uintah County is rapidly increasing. Between 2003 ($19,396) and 2004 ($22,313) Uintah County’s per capita income increased approximately 15 percent. This increase was the fourth highest in the State over the same time period (GOPB 2006).

3.2.1.3 LOCAL GOVERNMENT FISCAL CONDITIONS AND REVENUES FROM OIL AND GAS ACTIVITIES

Oil and gas operations contribute considerable revenue to various local, State, and federal government entities through payment of various royalties and taxes. The following types of revenue are typically generated by oil and gas development.
Federal Mineral Lease Royalties

Federal mineral lease royalties are collected from oil and gas, gas plant products, gilsonite, and phosphate extraction operations located on federally administered public lands in Uintah County. At present, the federal royalty rate for gas is based on a step scale that varies by production rate. Federal mineral leasing regulations require the return of 50 percent of royalties collected from these operations to the State of origin. In 2005, total federal mineral lease royalties generated by operations in Uintah County amounted to approximately $76.8 million. Approximately $16.7 million was allocated to Uintah County special service districts (Uintah County Special Service District, 2006).

Sales and Use Tax Revenue

Sales taxes are paid by oil and gas operations when purchases of equipment, materials, or supplies are made in the local area. Examples of purchases that generate sales tax revenue include gravel, pipe, fuel, and other supplies purchased locally. Like property tax revenue, sales and use tax revenues are used by local cities and counties to fund a wide variety of important local services and community facilities. Currently, the sales and use tax rate in Uintah County is 6.5 percent (4.75 percent State, 1.75 percent county/local) (Uintah County Clerk Auditor’s Office 2004).

Severance Tax

Severance tax is a tax on production and is currently a split rate. For example, the first $13.00 per barrel of oil is taxed at 3%; everything over that is taxed at 5%. The first $1.50 per thousand cubic feet (mcf) of gas is taxed at 3%; everything over that is taxed at 5%. Severance tax is a State tax charged by and paid to the Utah State Tax Commission and put into the State’s general tax fund (UDOGM 2006).

Conservation Tax

A conservation tax is collected by the Utah State Tax Commission at a rate of two-tenths of one percent (.002) of the value of oil and gas produced, sold, or transported from any field in Utah. Revenue generated from the conservation tax is paid into the State’s general tax fund (UDOGM 2006).

Property Tax Revenue

Among the most important sources of revenue in Uintah County are property taxes levied on locally and centrally assessed property. This revenue source is used by the counties to fund a wide variety of services and community facilities. Given their generally high assessed value, oil and gas and other types of industrial operations often contribute a significant portion of a county’s property tax base. The total assessed value of oil and gas extraction operations in 2003 for Uintah County was $418,801,897, which amounts to about 26 percent of Uintah County’s total assessed valuation of $1,593,779,187 (Uintah County Clerk Auditor’s Office, 2004).

In addition to ad valorem tax payments, Uintah County also collects payments-in-lieu of taxes (PILT) from the federal government for public lands within the county. In 2003, federal PILT taxes paid to Uintah County amounted to approximately $1.2 million.
3.22 WILDERNESS CHARACTERISTICS AREAS

No Wilderness Study Areas (WSA) exist within the Project Area. However, portions of the Project Area have been identified as having or likely to have wilderness characteristics (Figure 8).

In the late 1990s, public lands outside of existing WSAs in Utah were inventoried by the BLM for wilderness characteristics. BLM teams prepared wilderness inventory evaluations on these inventory units. The 1999 *Utah Wilderness Inventory* concluded that the entire 15,800-acre White River inventory unit met all of the criteria needed for wilderness values defined as “naturalness” and possessing “opportunities for solitude and primitive and unconfined recreation” (BLM 2003). As a result of statewide scoping, in October, 2001, the BLM published the Vernal Field Office Revisions to the 1999 Utah Wilderness Inventory which resulted in the addition of 648 acres of lands with wilderness characteristics (and the removal of a 40-acre parcel) contiguous to the White River wilderness inventory unit. The combined 1999 and 2001 inventory areas, areas identified by the BLM as having wilderness characteristics, will be referred to throughout this document as the White River wilderness inventory area or lands with wilderness characteristics. The Project Area encompasses 2,211 acres (or 13 percent) of the White River wilderness inventory area.

During scoping for the Vernal RMP revision, the Utah Wilderness Coalition proposed additional areas to be managed as having wilderness characteristics. Among the proposals was an expansion to the White River wilderness characteristics area. A BLM interdisciplinary team evaluated the proposal and other information and determined that there was a reasonable probability (RPD) that those lands contained wilderness characteristics. In the Draft Vernal RMP (2005), these lands are identified as areas *likely to have* wilderness characteristics. Approximately 1,264 acres of lands likely to have wilderness characteristics fall within the Project Area.

The total area of lands with (inventory area) or likely to have (RPD) wilderness characteristics within the Bonanza Project Area is approximately 3,475 acres (referred to hereafter as the wilderness characteristics area). Existing development, including roads and infrastructure for oil and gas development, is scattered throughout the area and nearly half of the area has been previously leased for oil and gas development. The identification of these lands is strictly administrative, with no recommendations regarding designations of wilderness areas or the creation of new wilderness study areas to be made. The right to explore and develop existing oil and gas leases on lands with or likely to have wilderness characteristics remains valid, and those valid existing rights would not be pre-empted by subsequent land use proposals or designations of wilderness.
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4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

The elements of the human environment or resource issues outlined in Chapter 1 that have the potential to be affected by the Proposed Action, Alternatives B and C are: air quality; ACECs; cultural resources; floodplains; invasive, non-native species; threatened, endangered or candidate plant species, threatened, endangered or candidate animal species; water quality (surface and ground); wetlands/riparian; wild and scenic rivers, livestock management; vegetation; fish and wildlife, including special status species other than FWS species, e.g., migratory birds; soils; recreation; visual resources; paleontology; socioeconomics; and wilderness characteristics. The potential direct, indirect, short- and long-term impacts related to each of these elements or resources are discussed in the above listed order in the following sections.

4.2 DIRECT/INDIRECT IMPACTS

4.2.1 AIR QUALITY

4.2.1.1 Proposed Action

Project-related emissions have the potential to affect air quality on both a local and a regional scale.

Well Development Impacts

Impacts for each phase in the development of a single well (construction, drilling and completion) were evaluated individually. A well location and adjoining unpaved access road were included in this analysis. Modeling for each development activity assumed that up to two adjacent locations could be constructed, drilled, or completed simultaneously.

Based on the proposed project schedule, a well location and associated access road would be constructed in approximately 5 days. The time to drill a well would average 14 days. A well would then be completed in approximately 5 days. Well drilling was assumed to occur 24 hours per day, while construction and completion activities were assumed to occur 10 hours per day during daylight hours only.

The pollutant emitted in the greatest quantities during well development would be PM$_{10}$ from earth-moving operations and travel upon unpaved roads. NO$_x$ and SO$_2$ would originate from the operation of heavy equipment and vehicle tailpipe emissions. Maximum hourly emissions of PM$_{10}$, PM$_{2.5}$, NO$_x$, and SO$_2$ were estimated and used for comparison to applicable short-term and annual ambient air quality standards. Comparison to annual standards is provided for consistency. However, the annual impacts are conservative in that they assume annual emissions allocated to the same locations for the entire development period, which is not the case.

The impacts from the construction, drilling, and completion phases of development are shown in Tables 4-1 and 4-2, below. The results represent the impacts from two adjacent wells being developed simultaneously for that particular activity. It is important to note that these impacts are localized and temporary in nature and will decrease significantly with distance from the immediate activity. Impacts from other activities in adjacent fields will be sufficiently separated by distance and time such that short-term impacts should not overlap with each other.
As shown, expected ambient air concentrations would be below all standards for the lengths of these three development activities. The annual NO₂, SO₂, PM₂.₅, and PM₁₀ results demonstrate that even if the proposed annual pace of development occurred in the same location during a single year, the effects would still be less than all ambient air quality standards.

Table 4-1. Proposed Action Development Phase PM₁₀ Impacts

<table>
<thead>
<tr>
<th>Activity</th>
<th>Averaging Period</th>
<th>Ambient Air Concentration (µg/m³)ᵃ</th>
<th>% of NAAQS (Project + Background)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Predicted</td>
<td>Backgroundᵇ</td>
</tr>
<tr>
<td>Construction</td>
<td>24-Hour</td>
<td>46</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Drilling</td>
<td>24-Hour</td>
<td>44</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Completion</td>
<td>24-Hour</td>
<td>38</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>2</td>
<td>10</td>
</tr>
</tbody>
</table>

ᵃ µ/m³ is micrograms of pollutant per cubic meter of air
ᵇ Source for Background Data: Dave Prey, Utah Division of Environmental Quality - Division of Air Quality (UDAQ), Personal Communication, November 30th, 2005. Data represent UDAQ estimates for rural areas within the Uinta Basin.

Table 4-2. Proposed Action Development Phase PM₂.₅, NO₂ and SO₂ Impactsᵃ

<table>
<thead>
<tr>
<th>Pollutant and Averaging Period</th>
<th>Averaging Period</th>
<th>Ambient Air Concentration (µg/m³)ᵇ</th>
<th>% of NAAQS (Project + Background)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Predicted</td>
<td>Backgroundᶜ</td>
</tr>
<tr>
<td>SO₂</td>
<td>3-Hour</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>24-Hour</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>0.5</td>
<td>5</td>
</tr>
<tr>
<td>NO₂</td>
<td>Annual</td>
<td>19</td>
<td>5</td>
</tr>
<tr>
<td>PM₂.₅</td>
<td>24-Hour</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Annual</td>
<td>1</td>
<td>9</td>
</tr>
</tbody>
</table>

ᵃ Impacts presented are highest results from construction, drilling, and completion
ᵇ µ/m³ is micrograms of pollutant per cubic meter of air
ᶜ Source: Dave Prey, Utah Division of Environmental Quality - Division of Air Quality (UDAQ), Personal Communication, November 30th, 2005. Data represent UDAQ estimates for rural areas within the Uinta Basin.
ᵈ Based on EPA’s revisions to the PM NAAQS published in the Federal Register October 17th, 2006, pp. 61144-61233. Concentration estimate represents the 98th percentile of 24-hour PM₂.₅ concentrations.
Operational Impacts

Criteria Pollutants

The predicted criteria pollutant impacts from operations after all wells have been developed are compared to applicable Utah and NAAQS standards and Prevention of Significant Deterioration (PSD) Class II increments for NO₂ and PM₁₀. Any comparisons with PSD increments are intended only to evaluate potential significance, and do not represent a regulatory PSD increment consumption analysis. PSD increment consumption analyses are typically applied to large industrial sources during the permitting process, and are solely the responsibility of the State of Utah and the Environmental Protection Agency.

Emissions from natural gas compressor engines well pad separator heaters and mobile sources (tailpipe and fugitive dust emissions generated from operations and maintenance vehicles) were evaluated. In order to characterize full-field emissions, well pad and access road criteria pollutant emissions were aggregated into 17 area sources and distributed at representative locations throughout the Project Area. The portion of the proposed compression that would be natural gas-powered (8,000 hp) was distributed to known or proposed locations. As illustrated in Table 4-3, criteria pollutant impacts from the Proposed Action operations would remain below all applicable standards.

Table 4-3. Proposed Action Operations Impacts

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Period</th>
<th>Ambient Air Concentration (µg/m³)</th>
<th>% of PSD Class II Increment</th>
<th>Project + Background b</th>
<th>% of NAAQS (Project + Background)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO₂</td>
<td>Annual</td>
<td>Predicted 7</td>
<td>27 %</td>
<td>12</td>
<td>12 %</td>
</tr>
<tr>
<td>PM₁₀</td>
<td>24-hour</td>
<td>9</td>
<td>30 %</td>
<td>37</td>
<td>25 %</td>
</tr>
<tr>
<td>PM₂,₅</td>
<td>Annual</td>
<td>2</td>
<td>14 %</td>
<td>12</td>
<td>25 %</td>
</tr>
<tr>
<td>PM₂,₅</td>
<td>24-hour c</td>
<td>1</td>
<td>NA</td>
<td>26</td>
<td>74 %</td>
</tr>
<tr>
<td>CO</td>
<td>1-hour</td>
<td>50</td>
<td>NA</td>
<td>1,161</td>
<td>3 %</td>
</tr>
<tr>
<td>CO</td>
<td>8-hour</td>
<td>16</td>
<td>NA</td>
<td>1,127</td>
<td>11 %</td>
</tr>
</tbody>
</table>

a µ/m³ is micrograms of pollutant per cubic meter of air
b with NO₂ annual background 5 µg/m³
c with PM₁₀ 24-hour background 28 µg/m³
d with PM₂,₅ annual background 10 µg/m³
e with PM₂,₅ 24-hour background 25 µg/m³
f with PM₂,₅ annual background 9 µg/m³
h with CO 1-hour and 8-hour background 1,111 µg/m³

Based on EPA’s revisions to the PM NAAQS published in the Federal Register October 17th, 2006, pp. 61144-61233. Concentration estimate represents the 98th percentile of 24-hour PM₂,₅ concentrations.

Source for Background Data: Dave Prey, Utah Division of Environmental Quality - Division of Air Quality (UDAQ), Personal Communication, November 30th, 2005. Data represent UDAQ estimates for rural areas within the Uinta Basin.

Hazardous Air Pollutants

Hazardous Air Pollutant (HAP) impacts resulting from ongoing operations were evaluated for a representative gas processing facility surrounded by a grid of well pad locations. The central facility would emit formaldehyde from the natural gas compressor engines, and benzene, toluene,
ethylbenzene, xylene (BTEX) and n-hexane from dehydrators. Additionally, well pad condensate storage tanks would emit small quantities of BTEX and n-hexane.

There are no applicable State or Federal ambient air quality standards for evaluating HAP impacts. However, comparisons were made to State of Utah Toxic Screening Levels (TSLs) which are thresholds applied during the air permitting process to assist in the evaluation of HAPs released into the atmosphere (Utah Department of Environmental Quality-Air Quality Division 2000). These levels are not standards that must be met, but rather screening thresholds which if exceeded, would suggest that additional information is needed to evaluate potential health and environmental impacts.

Table 4-4 demonstrates that HAP impacts would be well below the most stringent State of Utah health thresholds.

<table>
<thead>
<tr>
<th>Pollutant and Averaging Period</th>
<th>Ambient Air Concentration (µg/m³)a</th>
<th>Toxic Screening Levelsɔ</th>
<th>% of TSL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Predicted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzene (24-hour)</td>
<td>35</td>
<td>53</td>
<td>66 %</td>
</tr>
<tr>
<td>Toluene (24-hour)</td>
<td>51</td>
<td>6,280</td>
<td>&lt; 1 %</td>
</tr>
<tr>
<td>Ethylbenzene (1-hour)</td>
<td>32</td>
<td>54,274</td>
<td>&lt; 1 %</td>
</tr>
<tr>
<td>Ethylbenzene (24-hour)</td>
<td>3</td>
<td>14,473</td>
<td>&lt; 1 %</td>
</tr>
<tr>
<td>Xylene (1-hour)</td>
<td>249</td>
<td>65,129</td>
<td>&lt; 1 %</td>
</tr>
<tr>
<td>Xylene (24-hour)</td>
<td>27</td>
<td>14,473</td>
<td>&lt; 1 %</td>
</tr>
<tr>
<td>n-Hexane (24-hour)</td>
<td>8</td>
<td>5,875</td>
<td>&lt; 1 %</td>
</tr>
<tr>
<td>Formaldehyde (1-hour)</td>
<td>7</td>
<td>37</td>
<td>18%</td>
</tr>
</tbody>
</table>

a µ/m³ is micrograms of pollutant per cubic meter of air
b Although there exists an acute TLV for benzene, the State of Utah does not apply a comparison to an acute TSL since the chronic TSL is more stringent.
ɔ Source: Utah Department of Environmental Quality - Air Quality Division (2000).

Since benzene and formaldehyde are carcinogenic, annual average predicted concentrations were applied to assess a long-term cancer risk (based on 70-year exposure). Cancer risk was estimated for two exposure scenarios: 1) a maximally exposed individual (MEI) corresponding to an individual that could be exposed continuously (24 hours per day, seven days per week) for the entire life of the project (assumed as 25 years); and 2) given the remoteness of the area and absence of nearby residences, a most likely exposure (MLE) corresponding to an occupational exposure of 40 hours per week, 50 weeks per year for 25 years. Exposure adjustment factors of 0.357 for the MEI (25/70) and 0.082 for the MLE [40*50/8760*(25/70)] were applied to the estimated cancer risk to account for the actual time that an individual could be exposed during a 70-year lifetime.

Table 4-5 presents the unit risk factor and the exposure adjustment factor for both the MLE and MEI exposure scenarios for benzene and formaldehyde. The unit risk factor is a slope factor that when multiplied by the ambient air concentration provides an estimate of the probability of one additional person contracting cancer based on continuous exposure over a 70-year lifetime. A range of unit risk factors is available for benzene.
Modeled HAP cancer risks for the Proposed Action are summarized below. Since HAP impacts for this analysis are assessed against incremental, rather than total exposure, background HAP concentrations are not relevant. The maximum impact was observed near the compressor station boundary, decreasing sharply with distance. The significant cancer risk criterion of $1 \times 10^{-6}$ is at the low end of the range of cancer risks typically considered as acceptable when evaluating the health effects of a particular action. The range of acceptable cancer risks when evaluating the health effects of an action varies from 1 in a million to 1 in 10,000 (EPA 1999).

### Table 4-5. Proposed Action Carcinogenic HAP Risk

<table>
<thead>
<tr>
<th>HAP</th>
<th>Exposure Scenario</th>
<th>Unit Risk Factor (1/µg/m³)ᵃ</th>
<th>Exposure Adjustment Factor</th>
<th>Predicted Annual Impact (µg/m³)</th>
<th>Cancer Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene</td>
<td>MEI</td>
<td>$2.2 \times 10^{-6}$</td>
<td>0.357</td>
<td>1.2</td>
<td>1 in a million</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$7.8 \times 10^{-6}$</td>
<td>0.357</td>
<td>1.2</td>
<td>4 in a million</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>MEI</td>
<td>$1.3 \times 10^{-5}$</td>
<td>0.357</td>
<td>0.1</td>
<td>1 in a million</td>
</tr>
<tr>
<td>Benzene</td>
<td>MLE</td>
<td>$2.2 \times 10^{-6}$</td>
<td>0.082</td>
<td>1.2</td>
<td>&lt; 1 in a million</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$7.8 \times 10^{-6}$</td>
<td>0.082</td>
<td>1.2</td>
<td>&lt; 1 in a million</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>MLE</td>
<td>$1.3 \times 10^{-5}$</td>
<td>0.082</td>
<td>0.1</td>
<td>&lt; 1 in a million</td>
</tr>
</tbody>
</table>


Estimated project emissions of HAPs would be well below the levels that would create acute, chronic, or carcinogenic health risks for individuals exposed to those compounds. The location where maximum exposure would occur is along the boundary of the proposed compressor station. Therefore, even the MLE scenario is conservative in that residences, which are located greater than five miles from the proposed emission source, would likely be exposed to significantly lower concentrations than the maximum predicted. Therefore, air quality impacts related to emissions of HAPs as a result of the Proposed Action would be negligible.

In summary, while an emissions increase of both criteria and hazardous air pollutants is expected as a result of the Proposed Action activities, these emissions are not predicted to result in a violation of any ambient air quality standard or hazardous pollutant threshold. Accordingly, air quality impacts that would occur as a result of the Proposed Action during both the short-term development phase and long-term operations phase would likely be minor.

#### 4.2.1.2 Alternative B – No Action

Under Alternative B, the well development as proposed would not be approved and operators could reapply for drilling on a particular lease in the future. Under this scenario, five wells would be developed within this Project Area on State lands. Construction- and operational-related ambient air quality impacts for the five wells would be roughly 5% of those assumed for the Proposed Action. Because air quality impacts for the Proposed Action were demonstrated to be below significance levels, it follows that impacts under this alternative would likely be below significance levels.
4.2.1.3 Alternative C – Proposed Action with Additional Protection Measures

The impacts outlined and assessed in section 4.2.1.1 above for the Proposed Action would be the same for Alternative C.

4.2.2 AREAS OF CRITICAL ENVIRONMENTAL CONCERN

4.2.2.1 Proposed Action

As proposed, a total of 57 wells involving approximately 349 acres of surface would be within the proposed White River ACEC. Development of well pads and associated access roads under the Proposed Action have the potential to reduce or change the “relevance criteria” for fish and wildlife resources and scenic values for which the ACEC is proposed. However, the Proposed Action would not involve development within the White River Corridor itself and would commit to further construction and operation actions that would further mitigate impacts to the wildlife and visual resources forming the basis for the ACEC. These applicant-committed environmental protection measures include: installation of mufflers on drill rigs to reduce noise levels and incorporating site designs to minimize visual intrusions from the river. As such, the impacts to resource values for which the ACEC is proposed are expected to be minimal. As no State lands are included in the proposed ACEC, the proposed well located in section 16, T10S, R23E, would have no impact to the resource values associated with the proposed ACEC.

4.2.2.2 Alternative B – No Action

Since State lands are excluded from the proposed ACEC designation, there would be no adverse impacts on proposed ACECs.

4.2.2.3 Alternative C – Proposed Action with Additional Protection Measures

The impacts outlined and assessed in section 4.2.2.1 above for the Proposed Action would be the same for Alternative C.

4.2.3 CULTURAL RESOURCES

4.2.3.1 Proposed Action

The Proposed Action would implement avoidance strategies for all cultural resource sites determined eligible for listing on the National Register of Historic Places. As such, there would be no direct impacts to these cultural resources.

The Proposed Action would result in increased human presence and increased motorized access on new and existing roads in the Project Area. Vandalism, increased potential for collection, and accidental destruction of cultural resources could occur as an indirect effect of the Proposed Action. Cultural resources found within the Project Area would be categorized and protected consistent with existing BLM direction and in consultation with SHPO, thus minimizing impacts to scientifically important cultural resources.

4.2.3.2 Alternative B – No Action

This alternative would involve the drilling of five wells on State lands. The applicant has committed to completing Class I and III surveys prior to any surface disturbance and to
implement an avoidance strategy should any cultural resources determined eligible for listing on the NRHP be found. As such, even though the Proposed Action would involve about a 95 percent reduction in surface disturbance from the Proposed Action, the applicant-committed measures applied to State lands would effectively eliminate any direct impacts.

4.2.3.3 **Alternative C – Proposed Action with Additional Protection Measures**

The impacts outlined and assessed in section 4.2.3.1 above for the Proposed Action would be the same for Alternative C.

4.2.4 **FLOODPLAINS**

4.2.4.1 **Proposed Action**

The Proposed Action would involve construction associated with Kennedy and Coyote washes, major ephemeral drainages in the northern portion of the greater Project Area, as well as two unnamed ephemeral drainages in the “blocked” portion of the Project Area. These construction activities would be associated with the proposed power line and pipelines extending to the north; and pipeline and proposed well sites to the south. Applicant-committed measures adhering to the current *Gold Book* guidance including site-specific designs minimizing/eliminating possible leakages or spills into the drainage systems and requiring the use of containment structures as appropriate would effectively reduce the potential direct impacts to these ephemeral washes. There would be no impact to the White River floodplain, as no development is proposed for the White River corridor.

4.2.4.2 **Alternative B – No Action**

Under this alternative, construction of the proposed power line would not occur, thus eliminating any impacts to the Kennedy and Coyote Washes. Development in the blocked portion of the greater Project Area would be limited to the 5 proposed wells on State lands. As proposed these wells and their associated access routes, would not involve floodplains. Thus, Alternative B would result in no impacts to floodplains.

4.2.4.3 **Alternative C – Proposed Action with Additional Protection Measures**

The impacts outlined and assessed in section 4.2.4.1 above for the Proposed Action would be the same for Alternative C.

4.2.5 **INVASIVE AND NOXIOUS WEEDS**

4.2.5.1 **Proposed Action**

The Proposed Action could increase establishment of invasive and noxious weeds. These species could compete with native vegetation and reduce the diversity of current vegetation communities.

Based upon applicant-committed measures described in Chapter 2, Kerr-McGee would aggressively control noxious and invasive weeds along access road use authorizations, pipeline route authorizations, well sites, or other applicable facilities in accordance with their approved PUP. Key components of the PUP would include completing a baseline weed inventory and subsequent follow-up treatment and monitoring strategy that would effectively minimize impacts of invasive and noxious weeds in the native vegetation communities. Successful interim and final
reclamation/revegetation practices as discussed in Chapter 2 would also further minimize the increase and spread of invasive and noxious weeds in the Project Area. Thus the impacts to vegetation resources from invasive and noxious weed species would be effectively minimized.

### 4.2.5.2 Alternative B – No Action

The No Action Alternative involves the development of 5 proposed wells on State lands. While the scale of development would be reduced from the Proposed Action, surface disturbance associated with these five wells could result in noxious and invasive weeds species being introduced or increased on these State lands. However, as with the Proposed Action, implementation of the applicant-committed measures associated with invasive and noxious weeds would effectively minimize any impacts on State lands.

### 4.2.5.3 Alternative C – Proposed Action with Additional Protection Measures

The impacts outlined and assessed in section 4.2.5.1 above for the Proposed Action would be the same for Alternative C.

### 4.2.6 THREATENED, ENDANGERED OR CANDIDATE PLANTS

#### 4.2.6.1 Proposed Action

As discussed in Chapter 3, the only two plant species protected under the ESA potentially affected by the Proposed Action are the Uinta Basin hookless cactus and Ute ladies’-tresses.

**Uinta Basin Hookless Cactus**

Surface disturbance within potential habitat for the cactus would result in the loss or modification of that habitat, thereby potentially rendering it unsuitable for establishment of the species. Surface disturbance within occupied habitat for the species could result in a direct take of the species. However, based on the conservation measures outlined in Section 4.2.21, direct take of the species would be avoided.

Indirect effects to this cactus species include potential for illegal collection from increased access into or near this species habitat. Under the Proposed Action approximately 43.6 miles of new roads would be constructed and maintained until no longer needed. Increased access to the Bonanza Project Area via these proposed roads would result in increased visitation by the public, and increase the potential for possibility for illegal collection of this species, if occupied habitats occur there.

Increased disturbance and new roads in the Project Area as proposed could result in the spread of invasive and noxious weeds species, as well as weed invasions in Uinta Basin hookless cactus habitat. However, with the implementation of the applicant-committed measures to control noxious and invasive weed species, this impact would be effectively minimized.

Changes in surface water flow regimes associated with road and pad construction could increase sedimentation to Uinta Basin hookless cactus habitat. Many of the known cactus populations are associated with small, ephemeral drainages or areas where stormwater flows across slopes, but does not accumulate. Surface disturbance associated with the construction of well pads, access roads, pipelines, etc., can lead to increased soil erosion and stormwater runoff with heavy concentrations of sediment. The cactus is intolerant of heavy sedimentation. The BLM has
observed incidences where natural sediment deposition (e.g., sedimentation not caused by human activities) caused the loss of cacti or adversely modified suitable habitat. Fugitive dust from vehicle traffic on roadways in occupied habitat could coat individual cactus with dust reducing transpiration and affecting the long-term health of individual plants. Fugitive dust could also impact insect species serving as pollinator species for this cactus. Applicant-committed measures requiring the use of water to control fugitive dust and construction designs addressing drainage would reduce the potential impacts to this federally-listed cactus species.

Based on this assessment, BLM has determined that the Proposed Action would result in a “may affect, not likely to adversely affect” situation for the Uinta Basin hookless cactus.

Ute Ladies’-tresses

Due to high salt content in the soils associated with the White River, there is only marginal potential habitat for Ute ladies’-tresses to occur within the Bonanza Project Area. Ute ladies’-tresses require recurrent disturbance, e.g., sediment and some debris deposition, in the riparian zone to sustain their populations. Sediment to the White River riparian zone is directly affected by the numerous ephemeral drainages which carry flood-borne sediment and debris to the river which, if not deposited directly in the river, is deposited in the riparian zone downstream of the mouth of these drainages. Applicant-committed measures to reduce sediment from entering the ephemeral drainages would reduce the amount of potential sediment reaching the riparian zone of the White River. These protective measures in consideration of other resource values would further reduce the likelihood of creating or sustaining suitable and/or occupied Ute ladies’-tresses habitat.

Based on this assessment, BLM has determined that the Proposed Action would result in a “may affect, not likely to adversely affect” situation for Ute ladies-tresses.

4.2.6.2 Alternative B – No Action

Uinta Basin Hookless Cactus

Alternative B would result in the same impacts as set out in the Proposed Action; however, the scale of these potential impacts would be reduced to about 5 percent of what is proposed. Construction and operation of 5 proposed wells on State land could result in direct and potential indirect impacts should these State lands include habitat for this cactus species.

Based on this assessment, BLM has determined that Alternative B, the No Action, would result in a “may affect, likely to adversely affect” situation for the Uinta Basin hookless cactus.

Ute Ladies’-tresses

Naturally occurring erosion and sediment deposition along the White River from ephemeral drainages in the Project Area would continue. Applicant-committed measures to reduce erosion from the 5 proposed wells would not result in a substantial change from what is naturally occurring.

Based on this assessment, BLM has determined that the Proposed Action would result in a “may affect, not likely to adversely affect” situation for Ute ladies-tresses.
4.2.6.3 Alternative C – Proposed Action with Additional Protection Measures

Uinta Basin Hookless Cactus

The impacts outlined and assessed in section 4.2.6.1 above for the Proposed Action would be the same for Alternative C; except that implementation of this alternative’s conservation measures would further minimize, if not eliminate, the potential impacts to the Uinta Basin hookless cactus. The conservation measures would incorporate stated “buffer” distances to avoid plants within suitable and occupied habitat; revegetation standards in suitable and occupied habitat; and would require re-initiation of section 7 consultation if any loss of plants or occupied habitat occurs as a result of project activities. Additional measures may be developed and implemented as needed, in consultation with the FWS, to ensure continued compliance with the ESA.

Based on this assessment, BLM has determined that Alternative C, the Proposed Action with Additional Protection Measures, would result in a “may affect, not likely to adversely affect” situation for the Uinta Basin hookless cactus.

Ute Ladies’-tresses

The impacts outlined and assessed in the Ute Ladies’-tresses section above for the Proposed Action would be the same for Alternative C.

Based on this assessment, BLM has determined that Alternative C, the Proposed Action with additional protection measures, would result in a “may affect, not likely to adversely affect” situation for Ute ladies-tresses.

4.2.7 THREATENED, ENDANGERED, CANDIDATE WILDLIFE SPECIES

4.2.7.1 Proposed Action

Threatened, Endangered, Candidate Bird Species

Bald Eagle (Haliaeetus leucocephalus)

No development is proposed for the White River corridor, thus there would be no impacts to bald eagles choosing to nest or roost in mature cottonwood trees along the river. Construction of wells, pipelines, access roads, and other facilities on upland areas during the winter months would result in temporary displacement of bald eagles from foraging habitat. There is the increased potential for mortality to bald eagles due to higher traffic levels on existing roadway and vehicles traveling on new roadway in the Project Area. Improperly designed and installed power poles in the northern portion of the greater Project Area could result in increased mortality of bald eagles from electrocution. Disturbance to 877 acres under the Proposed Action would reduce habitat for small mammals on which the bald eagle depends. However, bald eagles would continue to forage for upland winter prey outside of these disturbed areas. Applicant-committed measures associated with road placement, vehicle traveling speeds; adherence to avian protection guidance for power-pole design and installation would minimize impacts to bald eagles. In addition, based on the measures outlined in Section 4.2.21, mortality would be avoided, and direct and indirect impacts would be reduced.

Based on this assessment, BLM has determined that the Proposed Action would result in a “may affect, not likely to adversely affect” situation for the bald eagle (Haliaeetus leucocephalus).
Mexican Spotted Owl (Strix occidentalis lucida)

Since MSO could potentially utilize “fair” and “good” habitats in or near the “blocked” portion of the greater Project Area for future nesting sites, any surface disturbance within 0.5 miles of such habitat that may occur in these areas could prevent the areas from being selected and used in the future. These impacts would continue throughout the life of the project. As the Proposed Action would not include any development within the White River corridor potential impacts to the owl would be minimal. Furthermore, based on the conservation measures outlined in Section 4.2.21, which would require compliance with USFWS MSO survey guidelines and PAC identification, there would be no direct effects on breeding or nesting MSO within the Project Area.

Based on this assessment, BLM has determined that the Proposed Action would result in a “may affect, not likely to adversely affect” situation for the Mexican Spotted Owl (Strix occidentalis lucida).

Yellow-billed Cuckoo (Coccyzus americanus occidentalis)

The Project Area includes 142 acres of riparian habitat. However, no development is proposed for the White River corridor on either BLM-administered or State-administered public lands. Thus, there would be no direct impact to the yellow-billed cuckoo.

Indirect impacts on the yellow-billed cuckoo could occur as a result of decreased water quality due to increased erosion from surface disturbance or accidental spills. Changes in water quality could in turn, lead to a degradation of riparian vegetation, thereby decreasing habitat value for the yellow-billed cuckoo. However, applicant-committed measures to eliminate or minimize spills and erosion would effectively mitigate potential indirect impacts to the riparian zone and subsequently potential yellow-billed cuckoo habitat in the Project Area.

Based on this assessment, BLM has determined that the Proposed Action would result in a “may affect, not likely to adversely affect” situation for the yellow-billed cuckoo (Coccyzus americanus occidentalis).

Threatened, Endangered, Candidate Mammal Species

Black-footed Ferret

The black-footed ferret, a federally listed endangered species, utilizes prairie dog colonies for shelter and feeds on the prairie dogs. BLM records do not indicate white-tailed prairie dog colonies within the Project Area. However, field reconnaissance has identified numerous small colonies throughout portions of the Project Area.

If black-footed ferrets are present in the project area, the Proposed Action could result in direct and indirect impacts to this species. The direct impacts would include mortality from construction activities that resulted in destruction of the white-tailed prairie dog colonies. Indirect impacts would include loss of prairie dog colonies and disturbance due to noise from construction and human activities. Increased traffic and construction of well pads, pipelines, and roads associated with the Proposed Action may cause an increase in prairie dog mortality, habitat fragmentation and loss, and colony abandonment, thereby decreasing the viability of the habitat to support black-footed ferrets. Fragmentation of habitat is of particular concern, since black-footed ferrets would need a minimum density of 8 prairie dog burrows/acre (20 burrows/ha) for the ferret.
population to survive (USFWS 1989). These impacts would result from the estimated 877 acres of new surface disturbance associated with the Proposed Action and this disturbance’s relationship to the scattered prairie dog colonies in the greater Project Area.

Based on the US Fish and Wildlife determination “development of existing oil, gas, and mineral resources in the Coyote Basin will not jeopardize the establishment of ferrets in the release area (62 FR 23202ff)”, the proposed project would not adversely affect the black-footed ferret.

Threatened, Endangered, Candidate Fish Species

The project area overlaps the White River, and the nearest activity is approximately 0.5 mile away from the river. Implementation of the Proposed Action in or near designated critical habitats of the endangered Colorado River fish could impact the Colorado River Endangered Fish species by: 1) altering the substrate characteristics of the floodplain, thereby reducing the quality of habitat available to fish populations 2) changing the floodplain vegetation which provides allochthonous input into the river 3) potentially exposing fish species to contaminants from accidental spills/leaks of pipelines or productions facilities, and 4) resulting in a depletion of the Upper Colorado River Basin.

Increased vehicle traffic associated with oil and gas activities has the potential to introduce exotic species to floodplain areas. The spread of exotic plants can alter river channels. Channel width reductions increase water velocities in the main channel and decrease the number of low velocity backwaters.

The White River is a large river with high dilution factors. However, if a spill/leak were to enter this river, contaminants are likely to accumulate in backwater/depressional areas with reduced dilution and less flushing capacity (Woodward et al. 1985). The endangered Colorado River fish use these sites which provide cover and a food source. Water quality is defined by parameters such as temperature, dissolved oxygen, environmental contaminants, nutrients, turbidity, and is considered a primary constituent element of designated critical habitat for the Colorado River fishes. Research is limited regarding threats posed by environmental contaminants to the endangered Colorado River fishes (Woodward et al. 1985; Krahn et al. 1986). However, these studies have shown that contaminants, including petroleum hydrocarbons released via spills/leaks, can affect behavioral functions which have been shown to impair feeding behavior (Woodward et al. 1987). Early life stages of all fish are generally more sensitive to environmental contaminants than juveniles or adults, and disruption of behavioral functions can result in population declines or changes in year-class strength if enough individuals are affected (Little et al. 1993).

Applicant-committed measures to reduce spills/leaks that could enter the White River include: Installation of closed-loop system in drainages or areas of shallow ground water; installation of leak detection devices or self-contained mud systems with the drilling fluids and mud and cuttings being transported to approved disposal areas. In compliance with 40 CFR 112 a Spill Prevention, Control and Countermeasure (SPCC) plan would be developed and implemented as necessary. Any spills would be immediately reported to the BLM and other regulatory agencies as necessary. Indirect impacts on the species could occur from decreased water quality due to increased erosion and sediment yield resulting from surface disturbance and spills; however applicant-committed measures in road and well pad design to improve drainage and reduce sediment would effectively mitigate any impact to juveniles residing in backwater areas.
Activities that utilize water from the Colorado River watershed result in direct and indirect impacts to these species. A total of approximately 208.4 acre-feet of water would be used in relation to the Proposed Action. Over the 4-year construction phase of the project, the annual water use could involve about 51.2 acre-feet per year. The average annual flow in the White River at Asphalt Wash is about 387,426 acre-feet. Therefore, the Proposed Action would deplete the flow in the White River by 0.01 percent. This project-related flow depletion would be negligible from a hydrologic standpoint. However, activities that cause the depletion of water in the Colorado River watershed could result in direct and indirect impacts to these four endangered fish species.

Depletion or the removal of water from the Upper Colorado River Basin reduce the ability of the river to create and maintain the physical habitat (areas inhabited or potentially habitable to special status fish for use of spawning, development of fish larvae, feeding, or serving as corridors between these areas) and the biological environment. Water depletions can also contribute to alterations in flow regimes that favor nonnative fish. Endangered larval fish are very small (<0.5 inches total length) and incapable of directed swimming from the time of hatching through the first 2-4 wks of their life. Larvae can be captured by pumps removing water from locations located in low flow environments (slow moving water; backwaters, eddies, or the mouth of tributaries), especially during the months of July and August when larvae would be most concentrated in the low flow environments.

The annual withdrawal from the White River of about 51.2 acre-feet of water per year over a 4-year period would result in a water depletion from the Upper Colorado River Basin according to Biological Opinions prepared by the U.S. Fish and Wildlife Service (USFWS 1994, 1997). These Biological Opinions specify that the Recovery Implementation Program Recovery Action Plan, initiated in 1987 (USFWS 1987), had made sufficient progress to be the reasonable and prudent alternative thus avoiding the likelihood of jeopardy to these endangered fish species from new depletions of less than 3,000 acre-feet. The FWS determined that water depletion fees for projects annually depleting less than 100 acre-feet of water were no longer necessary (USFWS 1997).

The Colorado River Endangered Fish species could also be indirectly affected via increased erosion and sediments that could subsequently be yielded to the White and Green rivers through Project Area drainages, or via wells, pipelines, or roads constructed near the White River corridor. Similarly, if any spills occurred during a storm event, condensate could potentially be yielded to Project Area drainages, and subsequently to the White and Green Rivers.

Based on the potential for depletion of the Colorado River system, however, based on the conservation measures outlined in Section 4.2.21, BLM has determined that the Proposed Action would result in a “may affect, likely to adversely affect” situation for the humpback chub (Gila cypha), bonytail (Gila elegans); as well as the Colorado pikeminnow (Ptychocheilus lucius), the razorback sucker (Xyrauchen texanus), and their designated critical habitats.

4.2.7.2 Alternative B – No Action

Threatened, Endangered, Candidate Bird Species

Bald Eagle (Haliaeetus leucocephalus)

No development is proposed for the White River corridor, thus there would be no impacts to bald eagles choosing to nest or roost in mature cottonwood trees along the river. Construction of five wells on State land on upland areas during the winter months would result in temporary
displacement of bald eagles from about 13 acres foraging habitat, a decrease of 95 percent from the Proposed Action. There remains the potential for mortality to bald eagles due to traffic levels on existing roadways and vehicles traveling to/from the proposed State wells. However, the risk of eagle:vehicle collisions is substantially reduced from the Proposed Action due to the overall lack of development in the upland areas. As no power lines are proposed in Alternative B, there would be no impact to bald eagles.

Based on this assessment, BLM has determined that Alternative B, No Action, would result in a “may affect, not likely to adversely affect” situation for the bald eagle (Haliaeetus leucocephalus).

*Mexican Spotted Owl (Strix occidentalis lucida)*

Based on the 2005 data, only one potential MSO habitat site was identified on State lands in the “blocked” portion of the Project Area, near the White River. This site was determined to be of “poor” habitat quality; thus there is a low likelihood of any impacts from the 1 proposed well affecting the Mexican spotted owl. No other development would be associated with the White River corridor under this alternative.

Based on this assessment, BLM has determined that Alternative B, No Action, would result in a “may affect, not likely to adversely affect” situation for the Mexican Spotted Owl (Strix occidentalis lucida).

*Yellow-billed Cuckoo (Coccyzus americanus occidentalis)*

There are no State lands adjoining the White River and there is no other riparian habitat proposed for development under the No Action alternative. Thus, there would be no direct impact to the yellow-billed cuckoo.

Indirect impacts on the yellow-billed cuckoo could also occur as a result of decreased water quality due to increased erosion from surface disturbance or accidental spills from the 5 proposed State wells. Changes in water quality could in turn, lead to a degradation of riparian vegetation, thereby decreasing habitat value for the yellow-billed cuckoo. However, applicant-committed measures to eliminate or minimize spills and erosion applied to State lands would effectively mitigate potential indirect impacts to the off-site riparian zone and subsequently potential yellow-billed cuckoo habitat.

Based on this assessment, BLM has determined that the Proposed Action would result in a “may affect, not likely to adversely affect” situation for the yellow-billed cuckoo (Coccyzus americanus occidentalis).

*Threatened, Endangered, Candidate Mammal Species*

*Black-footed Ferret*

The black-footed ferret, a federally listed endangered species, utilizes prairie dog colonies for shelter and feeds on the prairie dogs. BLM records do not indicate white-tailed prairie dog colonies within the Project Area. However, field reconnaissance has identified numerous small colonies throughout portions of the Project Area.
If black-footed ferrets are present in the project area, the No Action could result in direct and indirect impacts to this species, though at a lesser level than under the proposed action alternative. The direct impacts would include mortality from construction activities that resulted in destruction of the white-tailed prairie dog colonies. Indirect impacts would include loss of prairie dog colonies and disturbance due to noise from construction and human activities. Increased traffic and construction of well pads, pipelines, and roads associated with the Proposed Action may cause an increase in prairie dog mortality, habitat fragmentation and loss, and colony abandonment, thereby decreasing the viability of the habitat to support black-footed ferrets. Fragmentation of habitat is of particular concern, since black-footed ferrets would need a minimum density of 8 prairie dog burrows/acre (20 burrows/ha) for the ferret population to survive (USFWS 1989). These impacts would result from the estimated 13 acres of new surface disturbance associated with the No Action and this disturbance’s relationship to the scattered prairie dog colonies in the greater Project Area.

Based on the US Fish and Wildlife determination “development of existing oil, gas, and mineral resources in the Coyote Basin will not jeopardize the establishment of ferrets in the release area (62 FR 23202ff)”, the no action alternative would not adversely affect the black-footed ferret.

Threatened, Endangered, Candidate Fish Species

The No Action Alternative would result in approximately ninety-five percent less development and therefore ninety-five percent less potential for altering the substrate characteristics of the floodplain, reducing the quality of habitat available, changing the floodplain vegetation, exposing the fish species to contamnates, and water depletion.

The project area overlaps the White River, and the nearest activity is approximately 0.5 mile away from the river. Implementation of the Proposed Action in or near designated critical habitats of the endangered Colorado River fish could impact the Colorado River Endangered Fish species by: 1) altering the substrate characteristics of the floodplain, thereby reducing the quality of habitat available to fish populations 2) changing the floodplain vegetation which provides allochthonous input into the river 3) potentially exposing fish species to contaminants from accidental spills/leaks of pipelines or productions facilities, and 4) resulting in a depletion of the Upper Colorado River Basin.

Increased vehicle traffic associated with oil and gas activities has the potential to introduce exotic species to floodplain areas. The spread of exotic plants can alter river channels. Channel width reductions increase water velocities in the main channel and decrease the number of low velocity backwaters.

The White River is a large river with high dilution factors. However, if a spill/leak were to enter this river, contaminants are likely to accumulate in backwater/depressional areas with reduced dilution and less flushing capacity (Woodward et al. 1985). The endangered Colorado River fish use these sites which provide cover and a food source. Water quality is defined by parameters such as temperature, dissolved oxygen, environmental contaminants, nutrients, turbidity, and is considered a primary constituent element of designated critical habitat for the Colorado River fishes. Research is limited regarding threats posed by environmental contaminants to the endangered Colorado River fishes (Woodward et al. 1985; Krahn et al. 1986). However, these studies have shown that contaminants, including petroleum hydrocarbons released via spills/leaks, can affect behavioral functions which have been shown to impair feeding behavior (Woodward et al. 1987). Early life stages of all fish are generally more sensitive to environmental
contaminants than juveniles or adults, and disruption of behavioral functions can result in population declines or changes in year-class strength if enough individuals are affected (Little et al. 1993).

Applicant-committed measures to reduce spills/leaks that could enter the White River include: Installation of closed-loop system in drainages or areas of shallow ground water; installation of leak detection devices or self-contained mud systems with the drilling fluids and mud; and cuttings being transported to approved disposal areas. In compliance with 40 CFR 112 a Spill Prevention, Control and Countermeasure (SPCC) plan would be developed and implemented as necessary. Any spills would be immediately reported to the BLM and other regulatory agencies as necessary. Indirect impacts on the species could occur from decreased water quality due to increased erosion and sediment yield resulting from surface disturbance and spills; however applicant-committed measures in road and well pad design to improve drainage and reduce sediment would effectively mitigate any impact to juveniles residing in backwater areas.

Activities that utilize water from the Colorado River watershed result in direct and indirect impacts to these species. The project-related flow depletion (10 acre-feet) would be negligible from a hydrologic standpoint. However, activities that cause the depletion of water in the Colorado River watershed could result in direct and indirect impacts to these four endangered fish species.

Depletion or the removal of water from the Upper Colorado River Basin reduce the ability of the river to create and maintain the physical habitat (areas inhabited or potentially habitable to special status fish for use of spawning, development of fish larvae, feeding, or serving as corridors between these areas) and the biological environment. Water depletions can also contribute to alterations in flow regimes that favor nonnative fish. Endangered larval fish are very small (<0.5 inches total length) and incapable of directed swimming from the time of hatching through the first 2-4 wks of their life. Larvae can be captured by pumps removing water from locations located in low flow environments (slow moving water; backwaters, eddies, or the mouth of tributaries), especially during the months of July and August when larvae would be most concentrated in the low flow environments.

The withdrawal from the White River of about 10 acre-feet of water would result in a water depletion from the Upper Colorado River Basin according to Biological Opinions prepared by the U.S. Fish and Wildlife Service (USFWS 1994, 1997). These Biological Opinions specify that the Recovery Implementation Program Recovery Action Plan, initiated in 1987 (YSFWS 1987), had made sufficient progress to be the reasonable and prudent alternative thus avoiding the likelihood of jeopardy to these endangered fish species from new depletions of less than 3,000 acre-feet. The FWS determined that water depletion fees for projects annually depleting less than 100 acre-feet of water were no longer necessary (USFWS 1997).

The Colorado River Endangered Fish species could also be indirectly affected via increased erosion and sediments that could subsequently be yielded to the White and Green rivers through Project Area drainages, or via wells, pipelines, or roads constructed near the White River corridor. Similarly, if any spills occurred during a storm event, condensate could potentially be yielded to Project Area drainages, and subsequently to the White and Green Rivers.

Based on the potential for depletion of the Colorado River system, and the conservation measures outlined in Section 4.2.21, BLM has determined that Alternative B, No Action, would result in a “may affect, likely to adversely affect” situation for the humpback chub (Gila cypha), bonytail...
(Gila elegans); as well as the Colorado pikeminnow (Ptychocheilus lucius), the razorback sucker (Xyrauchen texanus), and their designated critical habitats.

4.2.7.3 Alternative C – Proposed Action with Additional Protection Measures

Threatened, Endangered, Candidate Bird Species

Bald Eagle (Haliaeetus leucocephalus)

The impacts outlined and assessed in the bald eagle (Haliaeetus leucocephalus) section above for the Proposed Action would be the same for Alternative C.

Based on this assessment, BLM has determined that Alternative C, the Proposed Action with Additional Protection Measures, would result in a “may affect, not likely to adversely affect” situation for the bald eagle (Haliaeetus leucocephalus).

Mexican Spotted Owl (Strix occidentalis lucida)

The impacts outlined and assessed in the Mexican Spotted Owl (Strix occidentalis lucida) section above for the Proposed Action would be similar for Alternative C. However, implementation of the additional protection measure, which would require compliance with USFWS MSO survey guidelines and PAC identification, there would be no direct effects on breeding or nesting MSO within the Project Area.

Thus, based on this assessment, BLM has determined that Alternative C, the Proposed Action with Additional Protection Measures, would result in a “may affect, not likely to adversely affect” situation for the Mexican spotted owl (Strix occidentalis lucida).

Yellow-billed Cuckoo (Coccyzus americanus occidentalis)

The impacts outlined and assessed in the yellow-billed cuckoo (Coccyzus americanus occidentalis) section above for the Proposed Action would be the same for Alternative C.

Based on this assessment, BLM has determined that Alternative C, the Proposed Action with Additional Protection Measures, would result in a “may affect, not likely to adversely affect” situation the yellow-billed cuckoo (Coccyzus americanus occidentalis).

Threatened, Endangered, Candidate Mammal Species

Black footed ferret

The impacts outlined and assessed in section 4.2.7.3 above for the Proposed Action would be the same for Alternative C.

Based on the US Fish and Wildlife determination “development of existing oil, gas, and mineral resources in the Coyote Basin will not jeopardize the establishment of ferrets in the release area (62 FR 23202ff)”, the proposed project would not adversely affect the black-footed ferret.
Threatened, Endangered, Candidate Fish Species

The impacts outlined and assessed in section 4.2.7.3 above for the Proposed Action would be the same for Alternative C.

Based on the potential for depletion of the Colorado River system, BLM has determined that Alternative C, the Proposed Action with Additional Protection Measures, would result in a “may affect, likely to adversely affect” situation for the humpback chub (Gila cypha), bonytail (Gila elegans); as well as the Colorado pikeminnow (Pyctocheilus lucius), the razorback sucker (Xyrauchen texanus), and their designated critical habitats.

4.2.8 WATER QUALITY (SURFACE AND GROUND)

This section addresses potential impacts to surface water and groundwater resources resulting from the development of natural gas wells in the Project Area.

4.2.8.1 Proposed Action

Surface Water

There are three types of potential impacts to surface water resources that could occur as a result of the development of gas wells in the Project Area:

- Increased sedimentation and turbidity of surface water as a result of ground disturbance and increased erosion into surface waters via runoff;
- Effects on stream flow regimes – e.g., depletion of water flow in the Upper Colorado River Drainage Basin due to project-related water consumption; and
- Effects on water quality – i.e., potential contamination of surface water resources with drilling fluids, petroleum, or other chemicals used for natural gas drilling and production activities.

The potential for adverse impacts would be greatest shortly after the start of construction activities and would likely decrease in time due to natural stabilization, reclamation, and revegetation efforts. The magnitude of these potential impacts to surface water resources depends on several factors, including the proximity of the disturbance to the water influence zone (WIZ) of surface water drainages, slope aspect and gradient, soil type, the duration and timing of the construction activity, and the success or failure of reclamation and mitigation measures. The WIZ is defined as the riparian buffer zone that includes the floodplain, riparian vegetation, inner gorge, unstable areas, or highly erodible soils located adjacent to a stream or other water body. Each of the potential impacts is discussed below. Within the Project Area, the WIZ is the White River and its floodplain.

**Increased Sedimentation and Turbidity**

Increased erosion and subsequent increased sedimentation of ephemeral drainages within the Project Area is possible, especially during the construction of the project facilities. Over time, short-duration precipitation events and snowmelt could cause soil lost from the proposed facilities in the Project Area to reach the drainages of adjacent ephemeral watersheds. This fine sediment could then eventually be transported down the ephemeral drainages to the White River. In
sufficient amounts, the additional sediment from construction activities and operational facilities could clog stream channels and cause accelerated siltation of livestock ponds.

Based on data collected at USGS gauging station 09306700 on the White River at Asphalt Wash (the median of the calculated sediment loadings in tons/day), existing sediment loading in the White River averages about 242,360 tons/year. The highest sediment loading occurs during the months of May and June from snowmelt runoff. If it is assumed that all soil eroded from the project facilities enters adjacent drainages, the estimated increase in sediment loading from the proposed project facilities is about 3,667 tons per year for the short-term. Using the very conservative assumption that all available sediment from the construction of the project facilities would eventually be transported to the White River, construction of the Proposed Action facilities could potentially result in maximum increased sediment loadings to the White River of only about 1.5%.

The actual amount of sediment that would be transported to the White River is likely much smaller than the calculated maximum presented above. This would be due to the applicant-committed measures regarding well pad and road design to minimize erosion and improve proper drainage as well. Accordingly, the overall impact of the increased sediment loading to the White River from construction of the project facilities is considered to be minor. These applicant-committed measures would also minimize sediment loading of drainage channels and minimize siltation of livestock watering ponds.

**Stream Flow Regimes**

Soils compacted on existing roads, new access roads, and well pads contribute slightly greater runoff than undisturbed sites. The increased runoff could lead to slightly higher peak flows in the White River. The magnitude of the increased peak flows would be insufficient to cause increased erosion of the channel banks. Under the Proposed Action, water use for drilling, completion, pipeline testing, and dust abatement would be approximately 208.4 acre-feet.

**Surface Water Quality**

Contamination of surface water can occur in oil and gas fields. Sources of potential contamination include leaks from wellheads, conveyance pipelines, produced water and condensate storage tanks, and tanker trucks, and leaching of contaminants from impacted soils near these facilities.

To reduce the potential for hydrocarbon contamination of surface water, pipelines and associated collection piping would be designed to minimize the potential for spills and leaks. Section 2.2.2.1 of the Proposed Action outlines when a closed-loop drilling system would be used; and installation of leak detection systems or self-contained mud systems for drilling fluids would be used. Measures to contain a possible leak or spill are also presented. These measures would lessen the likelihood of impacts to surface water resources.

If a spill is detected, Kerr-McGee would implement a SPCC Plan (in accordance with 40 CFR 112), which specifies measures to control the spill, cleanup the spill, and reclaim the contaminated soil and vegetation. These measures would minimize potential impacts to surface water resources in the event of this type of spill event. As a result, any impact to surface water resources would be temporary and localized in nature. Therefore, the potential for contamination of surface water resources by produced water, petroleum, or other chemicals that would be used under the Proposed Action is considered to be minor.
Groundwater Quality

Potential impacts to groundwater resources could include contamination of aquifers from drilling pipe leaks. Adherence to On-shore Order #2 and the approved drilling program would effectively isolate all geologic formations in the drill hole and would eliminate contamination between hydrocarbon-bearing zones and water aquifers. As such it is highly unlikely there would be an impact to groundwater resources.

4.2.8.2 Alternative B - No Action

Surface Water

*Increased Sedimentation and Turbidity*

Based on assumptions of increased sedimentation and turbidity under the Proposed Action, and using the conservative assumption that all sediment from the construction of the project facilities would eventually be transported to the White River, construction of the five wells on State lands could potentially result in maximum increased sediment loadings to the White River of only about 0.8%.

*Stream Flow Regimes*

Soils compacted on existing roads, new access roads, and well pads contribute to slightly greater runoff than undisturbed sites. The increased runoff from the proposed five wells could lead to minimally higher peak flows in the White River, but about 95 percent less than the Proposed Action. The magnitude of the increased peak flows would be insufficient to cause increased erosion of the channel banks. There would be a small depletion of water from the White River (10.5 acre-feet or 85,000 barrels).

*Surface Water Quality*

As with the Proposed Action, the applicant-committed measures discussed in section 2.2.2.1 would be applied to the five wells proposed on State land. Thus the potential for contamination of surface water resources by produced water, petroleum, or other chemicals related to the proposed 5 proposed wells would be considerably less than the Proposed Action.

Groundwater Quality

Potential impacts to groundwater resources, including the potential for contamination of aquifers from drilling pipe leaks would be similar to the Proposed Action; however, the scale of impacts would be reduced about 95 percent. Adherence to On-shore Order #2 and the approved drilling program would effectively isolate all geologic formations in the drill hole and would eliminate contamination between hydrocarbon-bearing zones and water aquifers. As such it is unlikely there would be an impact to groundwater resources.

4.2.8.3 Alternative C – Proposed Action with Additional Protection Measures

The impacts outlined and assessed in section 4.2.8.1 for both surface water and groundwater quality above for the Proposed Action would be the same for Alternative C.
4.2.9 WETLANDS/RIPARIAN

4.2.9.1 Proposed Action

The Proposed Action would not involve development in riparian habitat of the Project Area. As such there would be no direct impact to this resource resulting from the Proposed Action. However, indirect impacts to the river’s riparian habitat from the Proposed Action could occur due to increased overland and stream flows from the 877 acres of surface disturbance. Applicant-committed measures including those minimizing sediment loading, proper road drainage techniques, interim and final reclamation, would effectively minimize impacts to the White River’s riparian habitat.

4.2.9.2 Alternative B – No Action

Proposed development on the State sections would be outside the White River corridor, thus like the Proposed Action, there would be no direct impacts to the riparian habitat of the river. The proposed development under the No Action alternative would involve about 13 acres, or about 95 percent less development than the Proposed Action. Indirect impacts to the river’s riparian habitat would be reduced accordingly. As with the Proposed Action, applicant-committed measures would minimize sediment runoff.

4.2.9.3 Alternative C – Proposed Action with Additional Protection Measures

The impacts outlined and assessed in section 4.2.9.1 for wetland and riparian habitat above for the Proposed Action would be the same for Alternative C.

4.2.10 WILD AND SCENIC RIVERS

4.2.10.1 Proposed Action

The proposed development would include a single well pad (Section 18, T10S, R23E) within 0.25 miles of the White River WSR corridor. Construction of this well pad would result in approximately 4.3 acres of surface disturbance.

Development of well pads and associated access roads under the Proposed Action has the potential to impact the “outstandingly remarkable values” and tentative “wild” classification for which the river is proposed.

Outstanding and Remarkable Values: The White River corridor is eligible for WSR designation because of outstandingly remarkable values (ORVs). The ORVs found in this segment of the White River include scenic, recreational, fish, wildlife/habitat, and historic values. Potential impacts to these values are discussed in their respective resource sections, e.g., cultural resources, wild (both TEC and other), recreation and visual.

Tentative WSR Classification: The Proposed Action would result in the loss of approximately 4.3 acres in the eligible “wild” area. Any disturbance that would occur as a result of the construction and production of proposed roads, wells and associated ancillary facilities would cause a loss of “wildness” within the proposed White River WSR corridor.

Due to applicant-committed measures the impact to outstanding and remarkable values is expected to be minor. However, this eligible, tentative “wild” area currently possesses 3.75
miles of roads (including Saddletree Draw, Atchees Wash Road, and Asphalt Wash Road) that are included on the Uintah County Transportation Plan. Therefore the impacts to the tentative WSR classification are expected to be minor.

4.2.10.2 Alternative B – No Action

Under the No Action alternative the proposed well within 0.25 mile of the White River WSR corridor would not be developed. Thus the direct and indirect impacts discussed above in section 4.2.10.1 would not occur.

4.2.10.3 Alternative C – Proposed Action with Additional Protection Measures

The impacts outlined and assessed in section 4.2.10.1 above for the Proposed Action would be the same for Alternative C.

4.2.11 LIVESTOCK MANAGEMENT

4.2.11.1 Proposed Action

The Proposed Action would result in the removal of approximately 609 acres of usable vegetation on portions of the five grazing allotments shown below. As a result of this disturbance, there would be a loss of 62 AUMs. As shown in Table 4-6 below, the maximum loss of AUMs would occur on the Seven Sisters allotment (two percent of total available AUMs in the allotment). The remaining AUM loss would affect less than one percent of available AUMs in the other four allotments.

**Table 4-6. Proposed Action Effects on Grazing Allotments**

<table>
<thead>
<tr>
<th>Allotment Name</th>
<th>Total Allotment AUMs</th>
<th>Est. Acres Per AUM</th>
<th>Surface Disturbance</th>
<th>Loss AUMs</th>
<th>Percent Loss of Total AUMs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antelope Draw</strong></td>
<td>3,679</td>
<td>15</td>
<td>40 acres</td>
<td>3 AUMs</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Little Emma</td>
<td>3,626</td>
<td>11</td>
<td>209 acres</td>
<td>19 AUMs</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Olsen AMP</td>
<td>9,268</td>
<td>11</td>
<td>0 acres</td>
<td>0 AUMs</td>
<td></td>
</tr>
<tr>
<td><strong>Seven Sisters</strong></td>
<td>1,920</td>
<td>9</td>
<td>362 acres</td>
<td>40 AUMs</td>
<td>2</td>
</tr>
<tr>
<td>Southam Canyon</td>
<td>1,315</td>
<td>10</td>
<td>0 acres</td>
<td>0 AUMs</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>19,808</td>
<td>611 acres</td>
<td>62</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Acreage and AUMs are approximated according to available mapping data and are rounded to the next highest number.
**The Project Area boundaries within these allotments are narrow corridors, containing the proposed ROWs.
1 Totals include percentages tallied using Project Area corridors and do not reflect a true average.

Ongoing livestock management issues include proper control of livestock while on their assigned grazing allotments. Increased roads within the Project Area would contribute to difficulties in controlling livestock as more natural barriers to livestock movement are removed, and as more
livestock use roads as travel routes. Applicant-committed measures to ensure the integrity of existing fences; adhering to posted speed limits; proper installation of regular maintenance of cattleguards would ensure proper control of livestock while on their allotments.

4.2.11.2 Alternative B – No Action

Under Alternative B, the proposed five wells on State lands and its associated surface disturbance would involve about 1 AUM (assuming 13 acres of disturbance and an average 11.2 acres/AUM carrying capacity). The No Action Alternative would result in a 98 percent reduction from the Proposed Action in the estimated total AUMs that would be lost.

Similar to the Proposed Action, applicant-committed measures would effectively eliminate possible livestock control concerns on State lands and surrounding BLM-administered public lands.

4.2.11.3 Alternative C – Proposed Action with Additional Protection Measures

The impacts outlined and assessed for the Proposed Action would be similar for Alternative C. The additional environmental protection measure (Section 2.4.5) requiring that no roads, pipelines, well pads or other gas facilities would be placed within a 660 feet (200 meter) distance of existing livestock facilities, such as corrals or watering facilities would further enhance the manageability of livestock while on the involved grazing allotments.

4.2.12 VEGETATION

4.2.12.1 Proposed Action

Under the Proposed Action, approximately 877 acres of vegetation would be removed as a result of surface disturbing activities. The majority of the disturbance, approximately 505 acres, would occur within the black sagebrush community. The remaining disturbance, approximately 372 acres, would occur largely within the desert shrub community.

4.2.12.2 Alternative B – No Action

Under Alternative B (No Action), the well development as proposed would not be approved. Five wells would be developed within this Project Area on State lands. Therefore, effects to vegetation would be reduced by roughly 95 percent. Direct effects to vegetation would result from disturbance or removal of vegetation from construction of well pads (approximately 12.5 acres). These effects would continue for the life of the project. Indirect effects could include the introduction or spread of noxious weeds.

4.2.12.3 Alternative C – Proposed Action with Additional Protection Measures

The impacts outlined and assessed for the Proposed Action would be the same for Alternative C.
4.2.13 FISH AND WILDLIFE

4.2.13.1 Proposed Action

General Wildlife

The disturbance of approximately 877 acres of potential wildlife habitat associated with the construction of wells, roads, pipelines, power lines, and related facilities and infrastructure would reduce habitat availability for a variety of common wildlife species. The long-term reduction in habitat is expected to have a minor to moderate impact on the general wildlife species in the greater Project Area because of the following:

- Many of the species discussed (e.g., cottontails, jackrabbits, coyotes, skunks, rodents) are habitat generalists, meaning they are not tightly restricted to specific habitat types;
- Many of the wildlife populations in the Project Area have likely adapted to existing gas exploration and production activities;

Project implementation would directly and indirectly increase habitat loss and habitat fragmentation in the Project Area. Disturbances from drilling activities and increased traffic could also displace wildlife from habitats in areas of human activity. Construction may result in displacement from affected habitats during the entire construction phase of a well, road or pipeline (weeks); whereas production could result in displacement only during well visits (hours). When displaced, individual animals could move into less suitable habitats or into habitats where interspecific and intraspecific competition may occur, resulting in subsequent effects of deteriorated physical condition, reproductive failure, mortality, and general distress. A long-term drought has already reduced forage quality and quantity in the Uinta Basin, which may increase impacts associated with displacement and resulting competition among small mammals and other species falling within the “general wildlife” category.

The severity of the direct and indirect impacts to general wildlife species under the Proposed Action would depend on the 1) availability of habitats within and outside the Project Area, 2) sensitivity of the species to human activity, 3) seasonal and daily timing of construction and development activities, and 4) site-specific topography and vegetation (e.g., construction sites that are visually obscured may impact adjacent wildlife less than where construction activities are in full view).

Big Game

Displacement can result in reduced use of habitats near disturbances and potential overcrowding of habitats into which the animals were displaced. Overcrowding may cause an increase in competition for space and forage, an increase in stress level, and a decrease in the health of the animal. As a result there could be a decrease in success of reproduction and/or an increase of winter mortality. The effects of displacement would be greatest in crucial big game winter ranges (BLM 2003). However, game species, such as deer, would adapt, to some degree, to the increase in human activity, especially if the activities are predictable and constant in occurrence.

Pronghorn Antelope

The Proposed Action would result in the disturbance to about 877 acres, less than 1 percent of the existing 80,900-acre Bonanza Herd Unit. Habitat loss associated with the Proposed Action could
result in reduced habitat use by pronghorn within and near disturbed areas, increased animal densities in adjoining habitats, and increased stress from intra- and interspecific competition. Application of the lease notice (IN-5) which identifies a seasonal timing restriction of May 15-June 20, to protect pronghorn during their kidding season would effectively mitigate the anticipated impacts to antelope due to habitat modification.

Disturbance from human activity would also reduce relative habitat value for pronghorn, especially during periods of heavy snow cover and cold temperatures. Pronghorn are likely to experience physiological stress during winter, particularly gestating females because they require higher energy levels for survival and successful reproduction. The increased presence of vehicles, equipment, and people within the Project Area, combined with the potential for insufficient winter forage, could exacerbate natural levels of winter stress among pronghorn that occupy the Project Area, thereby resulting in increased energy expenditures during severe winter periods. Disturbances in critical year-long range could also prevent access (e.g., travel corridors blocked by human activity) to sufficient amounts of forage necessary for winter survival. The ability of pronghorn to survive the winter and a female’s ability to produce viable offspring depends on fat reserves. Increased stress could cause fat reserves to be used more quickly and could reduce the survival of female pronghorn and their fetuses. Where wintering pronghorn are able to vacate areas surrounding construction operations, they could move to adjacent habitats where competition for resources may increase.

While the above section describes some of the potential effects of the Proposed Action on pronghorn, it is important to note that the Project Area occurs within an area where natural gas exploration and production has been on-going at varying levels since the 1950s. As such, pronghorn occupying the Project Area have somewhat adapted to the visual and noise impacts associated with this development. While individual pronghorn might be negatively affected by the direct and indirect impacts of the project, the Proposed Action is not likely to negatively impact the species on a population-level basis.

Mule Deer

The BLM identifies mule deer habitat with the White River corridor. As no development is planned for this corridor, direct impacts to this habitat would not occur. However, deer from the river corridor could migrate through or take advantage of usable winter forage on the uplands and thus the proposed 877 acres of surface disturbance associated with the Proposed Action could result in indirect impacts to mule deer.

Disturbance from human activity would also reduce relative habitat values for deer (Nicholson et al 1997), especially during periods of heavy snow cover and cold temperatures. Mule deer typically experience severe physiological stress during the winter; particularly gestating does because they require higher energy levels for survival and successful reproduction (UDWR 1997a, Karpowitz 1984). The increased presence of vehicles, equipment, and people within the Project Area, combined with the potential for insufficient forage due to surface disturbance, could result in increased energy expenditures by mule deer during severe winter periods (Karpowitz 1984, Garrott and White 1982, Woodward-Clyde 1995). Disturbances in critical year-long range could also prevent access (e.g., travel corridors blocked by human activity) to sufficient amounts of forage necessary for winter survival. In addition to direct loss and habitat fragmentation associated with the Proposed Action, disturbances from drilling activities and increased traffic could temporarily displace mule deer from habitats (including winter range) in areas of human activity. When displaced, individual mule deer would move to other adjacent habitats where competition for resources may increase.
While the above section describes some of the potential effects of the Proposed Action on mule deer, it is important to note that the Project Area occurs within an area where natural gas exploration and production has been ongoing at varying levels since the 1950s, and mule deer occupying the Project Area have somewhat adapted to the visual and noise impacts associated with this development. Thus, while individual mule deer might be negatively affected by the direct and indirect impacts of the project, the Proposed Action is not likely to negatively impact the species on a population-level basis.

**Special Status Raptors**

*Golden Eagle*

Implementation of the Proposed Action could impact both breeding and wintering golden eagles, depending on the location of surface-disturbing activities and surface facilities relative to occupied territories, active or inactive nest sites, or wintering areas. Surface-disturbing activities within 0.5 miles of an active eagle nest could lead to nest abandonment, thereby affecting the breeding pair and their annual productivity.

Since golden eagles often alternate between nest sites within a breeding territory, any surface facilities where ongoing traffic or human presence occurs could prevent inactive nests from being used in the future. As golden eagles are sensitive to human activity, they may also avoid hunting grounds where construction activities are taking place. In addition, roadside carrion is one of the golden eagle’s primary winter food sources. Thus, the potential for roadway mortality of carrion-feeding golden eagles could increase due to higher traffic levels associated with construction activities. These impacts would continue through project operation, particularly in areas of increased vehicle use and human presence along the project roadways.

Another potential direct impact to the species includes the potential for electrocution due to the addition of power lines within the Project Area. The applicant-committed measure to install power poles in accordance with current raptor protection guidelines would effectively eliminate this impact.

In addition to reducing nesting habitat and hunting opportunities, the surface disturbances associated with the Proposed Action would result in the direct loss of approximately 877 acres of year-round habitat for prey species such as small mammals, songbirds, and reptiles. Grante et al. (1991) suggest that incremental destruction of habitat for raptors’ prey base (e.g., ground squirrels, rabbits, mice) has had the largest effect on raptor populations in the Uinta Basin. The proposed surface disturbance and resulting habitat loss would be compounded by the prey base losses that are already occurring in the Uinta Basin due to the ongoing drought. This loss of some prey species may limit foraging opportunities for individual eagles; however, the prey reduction is not likely to cause a decrease in golden eagle populations.

Overall, the Proposed Action may affect individual golden eagles through displacement, habitat loss or degradation, but would not likely result in a trend towards federal listing of the species.

*Ferruginous Hawk*

As discussed in Chapter 3, although no ferruginous hawk nests have been identified within the Project Area, they could potentially occur there. Thus, the Proposed Action could result in both direct and indirect impacts to the ferruginous hawk.
Any breeding pairs occupying the Project Area could be disturbed by construction, drilling, or completion activities, which could potentially result in nest and territory abandonment, and subsequent reduction of the breeding pair’s productivity for that year.

In addition to reducing nesting habitat and hunting opportunities, the surface disturbances associated with the Proposed Action would result in the direct loss of approximately 877 acres of year-round habitat for prey species such as small mammals, songbirds, and reptiles. Grante et al. (1991) suggest that incremental destruction of habitat for raptors’ prey base (e.g., ground squirrels, rabbits, mice) has had the largest effect on raptor populations in the Uinta Basin. The proposed surface disturbance and resulting habitat loss would be compounded by the prey base losses that are already occurring in the Uinta Basin due to the ongoing drought. The applicant-committed measure to install power poles in accordance with current raptor protection guidance would effectively eliminate this impact.

Overall, the Proposed Action may affect individual ferruginous hawks through displacement and habitat loss or degradation, but would not likely result in a trend towards federal listing of the species.

**Swainson’s Hawk**

As discussed in Chapter 3, although no Swainson’s hawk nests have been identified within the Project Area, they could potentially occur there. Thus, the Proposed Action could result in both direct and indirect impacts to the Swainson’s hawk.

Direct impacts would include the loss of approximately 877 acres of foraging habitat. There is a remote possibility that Swainson’s hawk could be electrocuted due to the addition of power poles and lines in the Project Area. The applicant-committed measure to install power poles in accordance with current raptor protection guidance would effectively eliminate this impact. Overall, the Proposed Action may affect individual Swainson’s hawks through displacement and habitat loss or degradation, but would not likely result in a trend towards federal listing of the species.

In addition to reducing nesting habitat and hunting opportunities, the surface disturbances associated with the Proposed Action would result in the direct loss of approximately 877 acres of year-round habitat for prey species such as small mammals, songbirds, and reptiles. Grante et al. (1991) suggest that incremental loss of habitat for raptors’ prey base (e.g., ground squirrels, rabbits, mice) has had the largest effect on raptor populations in the Uinta Basin. The proposed surface disturbance and resulting habitat loss would be compounded by the prey base losses that are already occurring in the Uinta Basin due to the ongoing drought.

Overall, the Proposed Action may affect individual Swainson’s hawks through displacement and habitat loss or degradation, but would not likely result in a trend towards federal listing of the species.

**Western Burrowing Owl**

Direct impacts could include increased mortality from collisions with construction vehicles. Applicant-committed measure to construct roads to 30 mph or less and posting speed signs within the Project Area would effectively mitigate this impact. An additional impact to the species the includes the potential for electrocution due to the addition of power lines within the Project Area.
however applicant-committed measures related to power line construction and perch guards would reduce this impact to the species.

Direct impacts would include loss and fragmentation of habitat, primarily associated with white-tailed prairie dog colonies, displacement from foraging areas, interference with activities associated with reproduction, disturbance from increased human activity. If breeding birds are present in the vicinity of construction activities between April 1 and July 15, the Proposed Action could result in disturbances to breeding, nesting, and fledgling success.

Overall, the Proposed Action may affect individual Western burrowing owls through habitat degradation and impacts to individual birds, but would not likely result in a trend towards federal listing of the species.

**Migratory Birds, including Special Status Species**

Impacts to migratory birds in the Project Area would be dependent upon the seasons of construction, drilling, and completion activities. If these activities are completed in the late fall, many of the migratory species would have left the Project Area for southern wintering grounds. Surface disturbance and visual and noise impacts during this time would be temporary, and project-related impacts would not likely have a measurable impact on migratory bird populations as a whole or individual species in general. If construction, drilling, and completion were to occur during the spring or summer months, the Proposed Action could result in reproductive failure of breeding adults, nest abandonment, and/or direct mortality of eggs, nestlings, or fledglings through nest destruction. For example, ground-nesting bird species would be susceptible to nest destruction and mortality by construction vehicles and equipment and ATV traffic. Shrub nesting species may also be directly affected due to removal of shrub vegetation.

Direct impacts would also include the long-term removal of approximately 877 acres of potential nesting and foraging habitats. These impacts would have a greater effect on High-Priority migratory bird species that may be nesting in the Project Area due to their smaller population sizes and limited distribution. Construction, drilling, and completion related noise and human presence could also cause displacement from foraging or resting habitats. As with other wildlife species discussed in this section of the EA, displacement from the Project Area could cause birds to move into less suitable habitats or to habitats where interspecific and intraspecific competition may occur, potentially resulting in deteriorated physical condition, reproductive failure, mortality, and general distress. Migratory bird contact with materials in the reserve pit could also result in direct mortality of individual birds. Kerr-McGee commits to adhering to the Gold Book. This book outlines guidance for the protection of migratory bird species by installing nets and/or flags over reserve pits in areas having high bird concentrations. Additionally, direct impacts to the species include the potential for electrocution due to the addition of power lines within the Project Area. The applicant-committed measure to install power poles in accordance with current raptor protection guidance would effectively eliminate this impact.

Overall, the Proposed Action may affect individual migratory birds through displacement and habitat loss or degradation, but would not likely result in a trend towards federal listing of these species.

*Common Yellowthroat*

The Proposed Action would have no direct impact on the common yellowthroat as no development is planned in the White River. Indirect impacts on the common yellowthroat could
also occur as a result of decreased water quality due to increased erosion from surface disturbance or spills. Changes in water quality could in turn, lead to a degradation of riparian vegetation, thereby decreasing habitat value for the yellowthroat. However, applicant-committed measures and adherence to existing On-shore orders and regulations to prevent spills and/or leaks would effectively minimize the anticipated impacts to this species.

Overall, the No Action alternative may affect individual common yellowthroats through possible habitat degradation, but would not likely result in a trend towards federal listing of the species.

**Lewis’ Woodpecker**

No development is proposed within the White River corridor. As such no direct impacts to the Lewis’ woodpecker or its habitat would occur. Indirect impacts on the Lewis’ woodpecker could occur as a result of decreased water quality due to increased erosion from surface disturbance and spills. Changes in water quality could in turn, lead to a degradation of riparian vegetation, thereby decreasing habitat value for the woodpecker. However, applicant-committed measures and adherence to existing On-shore orders and regulations regarding the prevention of spills and/or leaks would effectively minimize the anticipated impacts to this species.

Overall, the No Action alternative may affect individual Lewis’ woodpeckers, but would not likely result in a trend towards federal listing of the species.

**Blue Grosbeak**

No development is proposed within the White River corridor. As such no direct impacts to the blue grosbeak or its habitat would occur. Indirect impacts on this species could occur as a result of decreased water quality due to increased erosion from surface disturbance and spills. Changes in water quality could in turn, lead to a degradation of riparian vegetation, thereby decreasing habitat value for the woodpecker. However, applicant-committed measures and adherence to existing On-shore orders and regulations regarding the prevention of spills and/or leaks would effectively minimize the anticipated impacts to this species.

Overall, the Proposed Action may affect individual blue grosbeaks through possible habitat degradation, but would not likely result in a trend towards federal listing of the species.

**Greater Sage Grouse**

The BLM RMP does not identify any active greater sage-grouse leks within the Project Area or within 2 miles of the Project Area boundary.

Thus there would be no impacts to the greater sage-grouse from the Proposed Action.

**Special Status Mammals**

**White-tailed Prairie Dog**

The principal potential negative impacts to white-tailed prairie dogs that may result from the implementation of the Proposed Action include decreased availability/use of prairie dog habitat through displacement, fragmentation and direct loss of habitat. These impacts would result from the estimated 877 acres of new surface disturbance associated with the Proposed Action and this disturbance’s relationship to the scattered prairie dog colonies in the greater Project Area.
Interim reclamation, attention to new road design placement relative to prairie dog colonies, posting speed limit signs; aggressive weed control; interim and final reclamation actions all would effectively mitigate impacts to the white-tailed prairie dog from the proposed development.

As such, the Proposed Action may affect individual white-tailed prairie dogs through possible habitat degradation, but would not likely result in a trend towards federal listing of the species.

**Spotted Bat**

Development of the Proposed Action would alter existing habitat as well as disturb approximately 877 acres of foraging habitat for the spotted bat in the Project Area. As traffic within the Project could increase, specifically through canyons or near cliffs, roosting sites could be impacted and potentially abandoned. In addition, the loss of potential prey species and decreased availability/use of certain habitats through displacement, habitat fragmentation and habitat modification may occur.

Overall, the Proposed Action may affect individual spotted bats through displacement, habitat loss or degradation, but would not likely result in a trend towards federal listing of the species

**Special Status Fish Species**

Impacts to the special status fish species associated with the proposed Project Area would be identical to those affecting the endangered Colorado River fishes (refer to 4.2.7.2). The Proposed Action would not involve development within the White River corridor thus no direct impacts to the river would occur. The possible impact from water usage relative to the Proposed Action would be negligible as the proposed annual withdrawal from the White River of about 51.2 acre-feet of water over a 4-year would result in a water depletion from the Upper Colorado River Basin according to Biological Opinions prepared by the U.S. Fish and Wildlife Service (USFWS 1994a, 1994b, 1997). However, these Biological Opinions specify that the Recovery Implementation Program Recovery Action Plan, initiated in 1988 (FWS 1988), had made sufficient progress to be the reasonable and prudent alternative thus avoiding the likelihood of jeopardy to these endangered fish species from new depletions of less than 3,000 acre-feet. The FWS determined that water depletion fees for projects annually depleting less than 100 acre-feet of water were no longer necessary (FWS 1994c).

Based on this assessment the Proposed Action may affect individual roundtail chub, flannelmouth sucker and/or bluehead sucker through habitat loss or degradation associated with the White River, but would not likely result in a trend towards federal listing of any of these species.

**Special Status Reptile Species**

**Greensnake**

As with other riparian obligate species, there would be no direct impacts from implementation of the Proposed Action on this species as no development is proposed within the White River corridor. Thus, the Proposed Action may indirectly affect individual greensnakes through habitat loss or mortality, but would not likely result in a trend towards federal listing of the species.

Overall, the Proposed Action may affect individual greensnakes, but would not likely result in a trend towards federal listing of this species.
4.2.13.2 Alternative B – No Action

General Wildlife

Under Alternative B, impacts to general wildlife species would be markedly reduced than those under the Proposed Action, given that only five wells would be developed on State lands. The type of potential impacts (e.g., temporary displacement of individual animals) would be similar, but the scale of impacts would be substantially less given the limited surface disturbance and project activity associated with five wells.

Big Game

Pronghorn Antelope

Impacts to pronghorn antelope from Alternative B would be the same as identified and assessed under the Proposed Action; however, the scale of the impacts would be lessened; only 13 acres would be involved. As these 13 acres would be on State lands, the BLM timing restriction would not be required. However, as these 13 acres would be located outside of the BLM’s crucial antelope kidding area, these impacts would be considered negligible.

Mule Deer

No development would occur in crucial mule deer habitat along the White River corridor, thus no direct impacts to mule deer would occur. However, like the Proposed Action, indirect impacts to mule deer may occur associated with the five wells proposed on State lands. The anticipated 13 acres of surface disturbance associated with the No Action alternative would be a substantial reduction from the 877 acres proposed for the Proposed Action. Thus the impacts to mule deer and their habitat would be considered minor.

Raptors, including Special Status Species

Impacts to raptor species from implementation of the No Action alternative would be similar to those identified for the Proposed Action; however, the scale of the impacts would be substantially lessened. The proposed five wells would involve an estimated 13-acre surface disturbance, a 95 percent reduction from the Proposed Action.

Overall, Alternative B, the No Action alternative, may affect individual raptors, including special status species, through displacement, habitat loss or degradation, but would not likely result in a trend towards federal listing of any individual species.

Migratory Birds, including Special Status Species

The impacts outlined and assessed for the Proposed Action would be the same for Alternative B; however, limited to only 13 acres, a marked reduction.

Overall, Alternative B, the No Action alternative, may affect individual migratory bird species through possible habitat degradation, but would not likely result in a trend towards federal listing of any individual species.
Special Status Mammals

*White-tailed Prairie Dog*

Development of the No Action Alternative could have impacts on white-tailed prairie dogs on State lands in the Project Area. Potential negative impacts could include a direct loss of habitat, an increase in the potential for mortality, and the decreased availability/use of certain habitats through displacement, habitat fragmentation, and habitat modification. These direct and indirect impacts would be limited to the 13 acres associated with the 5 proposed wells on State land, thus resulting in a substantial reduction of impacts to this species from the Proposed Action.

Based on this assessment, Alternative B, the No Action alternative may affect individual white-tailed prairie dogs through displacement, habitat loss or modification, but would not likely result in a trend towards federal listing of the species.

*Spotted Bat*

Implementation of the No Action Alternative would not involve development within the White River corridor, thus eliminate direct impacts to the spotted bat. However, this bat species would be indirectly affected by potential loss of habitat for prey species, and decreased availability or use of certain habitats through displacement. Although these impacts are similar to those associated with the Proposed Action, the No Action alternative would only involve 13 acres, thus a sizeable reduction from the Proposed Action.

However, as habitat for the spotted bat is widespread throughout the State, Alternative B, the No Action Alternative, may affect individual spotted bats through displacement, habitat loss or degradation, but would not likely result in a trend towards federal listing of the species.

Special Status Fish Species

Direct and indirect impacts roundtail chub, flannelmouth sucker or bluehead sucker could potentially result from implementation of the No Action alternative. Habitats for all three species would indirectly be affected via increased erosion and sediments that could subsequently be yielded to the White and Green rivers through Project Area drainages, or via wells, pipelines, or roads. Similarly, if any spills occurred during a storm event, condensate could potentially be yielded to Project Area drainages, and subsequently to the White and Green Rivers. Consumptive water uses for drilling, completion, and dust abatement (however minor) would incrementally reduce flows within the White River, leading to habitat loss and degradation for aquatic species. Although these impacts are similar to those for the Proposed Action, the No Action alternative would involve only 13 acres of disturbance, a 95 percent reduction from the Proposed Action.

Thus Alternative B, the No Action alternative, may indirectly affect individual roundtail chub, flannelmouth sucker or bluehead sucker through habitat modification, but these impacts would not likely result in a trend toward federal listing of these species.
4.0 - Environmental Consequences

Special Status Reptile Species

*Greensnake*

Implementation of the No Action alternative would not involve development in the White River corridor and its associated riparian habitat. As such, no direct impacts to this snake would occur. However, there may be a reduced indirect impact to the river’s riparian corridor.

Overall, the No Action alternative may indirectly affect individual greensnakes through habitat loss or mortality, but would not likely result in a trend towards federal listing of the species.

4.2.13.3 Alternative C – Proposed Action with Additional Protection Measures

General Wildlife

The impacts outlined and assessed for the Proposed Action would be the same for Alternative C.

Big Game

*Pronghorn Antelope*

The impacts outlined and assessed for the Proposed Action would be the same for Alternative C.

*Mule Deer*

The impacts outlined and assessed for the Proposed Action would be the same for Alternative C.

Raptors

The impacts outlined and assessed for Proposed Action would be similar for Alternative C. However, the additional protection measures specifically outlined for raptor species in section 2.4.2.1 would further reduce the impacts to nesting raptor species, affording protection to nesting pairs thus potentially increasing these raptor species’ population numbers and effectively minimizing possible raptor:vehicle collisions.

*Golden Eagle*

The impacts outlined and assessed for the Proposed Action would be similar for Alternative C. However the additional protection measures specifically outlined for raptor species in section 2.4.2.1 would further reduce the impacts to nesting raptor species, affording protection to nesting pairs thus potentially increasing these raptor species’ population numbers and effectively minimizing possible raptor:vehicle collisions.

Overall, Alternative C, the Proposed Action with Additional Protection Measures, may affect individual golden eagles through displacement and habitat loss or degradation, but would not likely result in a trend towards federal listing of the species.

*Ferruginous Hawk*

The impacts outlined and assessed for the Proposed Action would be similar for Alternative C. However the additional protection measures specifically outlined for raptor species in section
2.4.2.1 would further reduce the impacts to nesting raptor species, affording protection to nesting pairs thus potentially increasing these raptor species’ population numbers and effectively minimizing possible raptor:vehicle collisions.

Overall, Alternative C, the Proposed Action with Additional Protection Measures, may affect individual ferruginous hawks through displacement and habitat loss or degradation, but would not likely result in a trend towards federal listing of the species.

*Swainson's Hawk*

The impacts outlined and assessed for the Proposed Action would be similar for Alternative C. However the additional protection measures specifically outlined for raptor species in section 2.4.2.1 would further reduce the impacts to nesting raptor species, affording protection to nesting pairs thus potentially increasing these raptor species’ population numbers and effectively minimizing possible raptor:vehicle collisions.

Overall, Alternative C, the Proposed Action with Additional Protection Measures, may affect individual Swainson’s hawks through displacement and habitat loss or degradation, but would not likely result in a trend towards federal listing of the species.

*Western Burrowing Owl*

The impacts outlined and assessed for the Proposed Action would be similar for Alternative C. However the additional protection measures specifically outlined for raptor species in section 2.4.2.1 would further reduce the impacts to nesting raptor species, affording protection to nesting pairs thus potentially increasing these raptor species’ population numbers and effectively minimizing possible raptor:vehicle collisions.

Overall, Alternative C, the Proposed Action with Additional Protection Measures, may affect individual western burrowing owls through displacement and habitat loss or degradation, but would not likely result in a trend towards federal listing of the species.

*Migratory Birds, including Special Status Species*

The impacts outlined and assessed for the Proposed Action would be the same for Alternative C.

Overall, Alternative C, the Proposed Action with Additional Protection Measures, may affect individual migratory birds through displacement and habitat loss or degradation, but would not likely result in a trend towards federal listing of these species.

*Common Yellowthroat*

The impacts outlined and assessed for the Proposed Action would be the same for Alternative C.

Overall, Alternative C, the Proposed Action with Additional Protection Measures, may affect individual common yellowthroats through possible habitat degradation, but would not likely result in a trend towards federal listing of the species.

*Lewis’ Woodpecker*

The impacts outlined and assessed for the Proposed Action would be the same for Alternative C.
Overall, Alternative C, the Proposed Action with Additional Protection Measures, may affect individual Lewis’ woodpeckers, but would not likely result in a trend towards federal listing of the species.

*Blue Grosbeak*

The impacts outlined and assessed for the Proposed Action would be the same for Alternative C.

Overall, Alternative C, the Proposed Action with Additional Protection Measures, may affect individual blue grosbeaks through possible habitat degradation, but would not likely result in a trend towards federal listing of the species.

*Greater Sage-grouse*

The impacts outlined and assessed for the Proposed Action would be similar for Alternative C; however, the additional measure to survey for greater sage-grouse in all sagebrush habitat within a 2-mile radius of proposed construction and if leks were located to impose a two mile radii buffer during the breeding/nesting season of March 15-June 15, and to prohibit the permanent surface facilities within 1,000 feet of any identified leks would effectively minimize direct impacts to the greater sage-grouse should they occur within the Project Area.

Thus Alternative C, the Proposed Action with Additional Protection Measures, may affect individual greater sage-grouse through habitat loss or degradation, but would not likely result in a trend towards federal listing.

*Special Status Mammals*

*White-tailed Prairie Dog*

The impacts outlined and assessed for the Proposed Action would be the same for Alternative C.

As such, Alternative C, the Proposed Action with Additional Protection Measures, may affect individual white-tailed prairie dogs through possible habitat degradation, but would not likely result in a trend towards federal listing of the species.

*Spotted Bat*

The impacts outlined and assessed for the Proposed Action would be the same for Alternative C.

Overall, Alternative C, the Proposed Action with Additional Protection Measures, may indirectly affect individual spotted bats through displacement, habitat loss or degradation, but would not likely result in a trend towards federal listing of the species.

*Special Status Fish Species*

The impacts outlined and assessed for the Proposed Action would be the same for Alternative C.

Based on this assessment, Alternative C, the Proposed Action with Additional Protection Measures, may indirectly affect individual roundtail chub, flannelmouth sucker and/or bluehead
sucker through habitat loss or degradation associated with the White River, but would not likely result in a trend towards federal listing of any of these species.

**Special Status Reptile Species**

*Greensnake*

The impacts outlined and assessed for the Proposed Action would be the same for Alternative C.

Based on this assessment, Alternative C, the Proposed Action with Additional Protection Measures, may indirectly affect individual greensnakes through habitat loss of degradation associated with the White River, but would not likely result in a trend towards federal listing of this species.

### 4.2.14 SOIL RESOURCES

#### 4.2.14.1 Proposed Action

Potential impacts to soils in the Project Area from the Proposed Action include the removal of vegetation, mixing of soil horizons, soil compaction, increased susceptibility of the soils to wind and water erosion, contamination of soils with petroleum products, and loss of topsoil productivity.

A total of about 877 acres of soils would be disturbed during the construction of well pads, access roads, pipelines, power lines, compressor stations, and an evaporation pit. This represents about 6.8 percent of the total land surface of about 12,699 acres in the Project Area.

**Erosion and Sedimentation**

The primary effect of surface disturbances on soil resources is increased erosion and the resulting potential increase in sediment yield to nearby ephemeral drainages, perennial streams, and livestock ponds. Excavation of proposed well pads would result in increased erosion of Project Area soils. Additional erosion may also be expected from construction of access roads, (and their long-term operation and maintenance), compressor stations, the evaporation pit, and pipeline rights-of-way. The increased erosion of soils could potentially lead to increased sedimentation in watercourses, siltation of ponds, and loss of vegetative cover.

The current average erosion rate for soils within the Uinta Basin is reported to be about 1.5 tons per acre per year (BLM 1984 and references cited within). The majority of the sediment included in this average rate is thought to be derived from erosion of the badlands areas that occur to the north of the Project Area (BLM 1984). Therefore, erosion rates for individual soil types within the Project Area are likely lower than this estimate.

Two studies conducted on sediment yield from disturbed surfaces provide insight into the amount of increased erosion that could be expected from construction of well pads, roads, and other project facilities in the Project Area. Lusby and Toy (1976) reported that yields from reclaimed surface coal mines were initially 300% to 600% higher than from undisturbed surfaces. Frickel et al. (1975) found that yields increased to about 2.9 tons/acre/year (about a 200% increase) in the Piceance Basin of Colorado after construction of oil shale project facilities. Using these studies as examples, it is assumed that average erosion rates for soils in the Project Area would triple from about 1.5 tons/acre/yr to about 4.5 tons/acre/yr during the short-term. This increased erosion rate
would generate an additional 3,667 tons of sediment annually during construction of the proposed project facilities before interim reclamation measures are conducted. This represents a theoretical increase of about 16.6% for the total erosion rate for the Project Area.

The exact locations of the proposed well pads and routes of new access roads would be determined on a site-specific basis in consultation with the AO and would be chosen to minimize potential environmental impacts, including excessive erosion and potential sedimentation of ephemeral drainages and livestock ponds. Construction activities would proceed in accordance with the design standards presented in the “Gold Book” Kerr-McGee also has committed that construction and/or maintenance associated with roads would not occur on frozen or saturated soils when driving on such would result in surface ruts greater than 4 inches along straight travel routes.

The analysis described above represents the maximum amount of increased erosion expected from construction of the proposed well pads, compressor stations, access roads, the evaporation pit, and pipelines. The actual current erosion rate for areas where the proposed facilities would be built is likely lower that the 1.5 tons/acre/yr rate determined for the Book Cliffs Resource Area (BLM 1984). The actual amount of additional sedimentation that would reach the drainages in the Project Area, including the White River, depends on the effectiveness of the design standards employed. If it is assumed that all soil eroded from the project facilities enters adjacent drainages, the estimated increase in sediment loading from the proposed project facilities is about 3,667 tons per year. Using this “maximum” annual calculation, the very conservative assumption that all available sediment from the construction of the project facilities would eventually be transported to the White River, construction of the Proposed Action facilities could potentially result in maximum increased sediment loadings to the White River of about 1.5%.

**Soil Compaction**

Rangeland health standards were adopted by the Utah BLM to assist in the planning process for grazing, recreation, and other activities on BLM lands (BLM 1997). These standards are applicable to the construction of new roads and well pads on BLM lands. Rangeland Health Standard 1 States that “upland soils should exhibit permeability and infiltration rates that sustain or improve site productivity, considering the soil type, climate, and landform”. The Proposed Action would have a minor impact on the attainment of this standard, due to compaction and blending of soils in some locations. Compaction due to construction activities at the well pads and along access roads would reduce aeration, permeability, and water-holding capacity of the soils. An increase in surface runoff could be expected, potentially causing increased sheet, rill, and gully erosion. These impacts would be localized in nature and could potentially impact 6.8% of the Project Area. This is because, in addition to the lands directly disturbed by construction activities, the area impacted could include lands adjacent to the proposed facilities if excessive erosion or gullying is allowed to begin. Also, the segregation and reapplication of surface soils would cause the mixing of shallow soil horizons, resulting in a blending of soil characteristics and types. This blending would modify physical characteristics of the soils including structure, texture, and rock content, which could lead to reduced permeability and increased runoff from these areas.

**Soil Contamination**

Contamination of surface and subsurface soils near gas facilities can occur in oil and gas fields. Sources of potential contamination include leaks or spills of natural gas condensate liquids from wellheads, conveyance pipelines, produced water sumps, and condensate storage tanks.
Contaminates released to surface soils infiltrate the soil and can migrate vertically until the water table is encountered. To reduce the potential for contamination of soils, the applicant has committed to installing leak detection equipment, prepare and abide by an SPCC plan, using closed-loop drilling systems, and other actions to contain and immediately correct any spills or leaks. Thus, the potential for impacts to soils from spills is considered to be minor.

4.2.14.2 Alternative B - No Action

Under Alternative B, the No Action alternative, the well development as proposed would not be approved. Five wells would be developed within this Project Area on State lands. Therefore, soil erosion would continue at the present rate of less than 1.5 tons/acre/year, except in the 13 acres that would be disturbed for the five State wells. Erosion would generate an extra about 20 tons of sediment in that area annually until the disturbed areas are reclaimed and revegetated.

4.2.14.3 Alternative C – Proposed Action with Additional Protection Measures

The impacts outlined and assessed in section 4.2.14.1 above for the Proposed Action would be the same for Alternative C.

4.2.15 RECREATION

The potential adverse effects to recreation from natural gas development in the Bonanza Project Area would consist primarily of lost recreational opportunities or diminished recreational experience within and near the Project Area. There is considerable natural gas development throughout the Project Area. Recreational use is limited, however, by the circuitous access to the area. In addition, existing oil and gas facilities in the Project Area reduce the wild character for visitors seeking solitude and relatively pristine landscapes.

4.2.15.1 Proposed Action

Under the Proposed Action, an additional 95 well pads, 77 miles of pipeline, and approximately 24 miles of access road would be constructed within the Project Area. In addition, a 20-mile long, overhead electrical power line would be built extending from the Project Area to the Deseret Generation and Transmission power plant. Surface disturbance associated with the new well pads, associated facilities, roads, and pipelines would be visible to hunters, off-highway vehicle (OHV) users, people driving through the area to access the White River and the White River wilderness characteristics area, and other dispersed recreational users throughout much of the Project Area. The power line would be visible to recreational users from greater distances due to its 80-foot height. This shift to a more industrialized landscape, in combination with an increase in noise and traffic associated with construction, drilling, and completion activities would diminish the recreation experience of those visitors seeking a more pristine setting.

The 24 miles of new road proposed within the Project Area would provide recreational users with increased access to broader portions of the area, some of which were previously not accessible by vehicle. While it is not a prevalent use in the area, the additional roads and improved access could also expand trail-related recreational opportunities (such as OHV use and hunting). There are 2.4 acres of disturbance in areas designated as closed to OHV use. Such a situation may invite access or encourage people to violate the closure, making enforcement of the closure more difficult.
Recreational activities along the White River would likely be affected by construction and drilling in the short-term. Dust and noise would be noticeable during construction and drilling for those wells and access roads constructed nearest the river and would diminish the quality of the recreational experience during those phases. After construction and drilling activities are completed, people recreating along the White River would likely not be affected by activities within the Project Area.

**4.2.15.2 Alternative B - No Action**

Under Alternative B, the No Action alternative, the well development as proposed would not be approved. Therefore, effects of surface disturbance on recreational activities and experiences in the area would be limited to the five wells on State land, and would occur to a lesser degree than under the Proposed Action. No wells would be within close proximity of the White River and the recreational activities associated therewith. Recreational use of the River, therefore, would not be affected.

**4.2.15.3 Alternative C – Proposed Action with Additional Protection Measures**

The impacts outlined and assessed in section 4.2.15.1 for the Proposed Action would be the same for Alternative C.

**4.2.16 MINERAL RESOURCES/ENERGY PRODUCTION**

There are no active or pending mining claims in the greater Project Area. As such there would be no impacts to this resource use under any alternative and no further assessment is made in this document.

**4.2.17 VISUAL RESOURCES**

The construction and maintenance of natural gas facilities and associated features such as roads, pipelines, and powerlines would result in both short- and long-term visual impacts to the Bonanza Project Area. New well pads and facilities as well as production activities (e.g. dozers, drilling rigs, truck traffic, heavy equipment, dust, and lights) would increase visual contrasts within the existing landscape by modifying the natural lines, colors, forms and textures of the area. Construction, drilling, and completion activities would occur over a 4-year period and would generally be clustered both spatially and temporally. Drilling activity typically occurs 24-hours per day and lighting associated with nighttime drilling activities would be visible from reasonably long viewing distances.

Once construction activities are completed, long-term visual impacts would consist of reduced visual harmony within the overall landscape due to the introduction of modifications that create lasting contrasts. Long-term landscape contrasts would result from vegetation removal and land work associated with well pads and facilities, pipelines, as well as additional contrasts introduced by the proposed power line. These landscape modifications would yield a more industrialized visual setting.

Impacts would be considered adverse if the landscape as seen from sensitive viewpoints is substantially degraded or changed, or if the modification to the landscape could not meet the VRM classification requirements prescribed by the BLM.
4.2.17.1 Proposed Action

Under the Proposed Action, the plan of development includes burial of approximately 35 miles of pipeline. Burial of pipelines in areas where bedrock is near the surface would require blasting, resulting in changes in topography and noticeable modification of the visual landscape along these linear features when viewed from foreground and middle ground distances. The development of a power line along a 22-mile corridor in the Project Area would add a substantial visual contrast into the area. The linear power line would contrast with the natural lines colors, forms, and textures in the area and would be visible from extended viewing distances. All buried pipelines and overhead power lines are proposed for development within lands classified as VRM class IV.

The objective of VRM Class IV is to provide for management activities which allow major modification of the existing character of the landscape. The level of change to the characteristic landscape can, therefore, be quite high. Much of the Project Area has already been developed for natural gas resource extraction and, therefore, has a mixed rural and industrial landscape. A total of 95 new wells would be drilled in VRM Class IV areas under the Proposed Action resulting in a higher level of contrast with the natural landscape. Kerr-McGee’s applicant-committed measure to paint surface equipment, based upon the BLM recommendation during the APD process, to blend in with the surrounding area would decrease the overall visual effect of development. The proposed development in the VRM Class IV areas would meet BLM objectives.

VRM Class II lands encompass only a small portion of the Project Area along the White River corridor. There is one well proposed in the VRM Class II area. The objective of VRM Class II is to provide for management activities that retain the existing character of the landscape. The level of change to the characteristic landscape should, therefore, be minimal. The development of a well in the VRM Class II area would not meet the BLM objectives (to retain the existing character of the landscape) without the application of mitigation measures. The Proposed Action’s application of Gold Book guidelines in the placement and design of well pads and linear structures would effectively minimize the impacts to visual resources.

4.2.17.2 Alternative B - No Action

Under Alternative B (No Action), the well development as proposed would not be approved. Five wells would be developed within this Project Area on State lands, which are not managed for visual resource protection. No impacts to visual resources on BLM lands would occur.

4.2.17.3 Alternative C – Proposed Action with Additional Protection Measures

The impacts outlined and assessed in section 4.2.17.1 above for the Proposed Action would be the same for Alternative C.

4.2.18 PALEONTOLOGY

4.2.18.1 Proposed Action

Potential impacts to paleontological resources include the loss of scientifically important fossils due to ground-disturbing activities such as well pad, road, and pipeline excavation and grading. The magnitude of the potential losses cannot be quantified. Alternatively, construction of well pads, access roads, and pipeline corridors may uncover scientifically important fossils.
4.2.18.2 Alternative B – No Action

Under the No Action Alternative, a total of five wells could be drilled on State of Utah lands within the Project Area. Accordingly, the amount of land disturbed would be about one-eleventh the amount for the Proposed Action. The potential for destruction of fossils or discovery of new species would be smaller by a similar amount. However, under this option, paleontological surveys would not be required. Because of this, the potential for destruction of critical or significant fossils is higher for the No Action Alternative than for the Proposed Action.

4.2.18.3 Alternative C – Proposed Action with Additional Protection Measures

The impacts outlined and assessed in section 4.2.18.1 above for the Proposed Action would be similar for Alternative C. However additional protection measures relative to paleontology, such as avoiding exceptional or scientifically important fossil resources, conducting field surveys prior to surface disturbance and monitoring construction activities would substantially reduce the anticipated impacts to paleontological resources.

4.2.19 SOCIO-ECONOMICS

Implementation of the Proposed Action or No Action alternative would generally have positive socioeconomic effects primarily Uintah County, Utah, including: (1) increased employment opportunities for residents of Uintah County; (2) revenues to Uintah County and the State of Utah; and (3) a minor demand for housing and public services in rural communities and unincorporated areas located near the Project Area in Uintah County.

Both the Proposed Action and No Action alternatives have the potential to affect attitudes and opinions regarding the use of public lands. Uintah County has a long history of oil and gas development; and, consequently, residents are familiar with natural gas activities and their economic benefits. The combination of familiarity and anticipated economic benefit creates a climate of general acceptance of, and support for, continued oil and gas development within the County.

4.2.19.1 Proposed Action

Local Economy and Employment

Implementation of the Proposed Action would create additional employment opportunities in the Uinta Basin during the four-year construction phase and over the production lifetime of the wells (approximately 30 years). Opportunities for direct employment (e.g. positions hired for construction, production, and decommissioning) and indirect employment (jobs available in support industries) would arise as a result of project operations.

The primary influx of employment opportunities would occur during the drilling phase of the project. One to two drill rigs could be operating at any given period during the drilling program. Average, on location, workforce needs for drilling and completing an individual well would be a minimum of 10 people. When feasible, local sub-contractors and workers would be hired for the proposed well field development.

Once the wells are in production, a minimal, yet sustained level of permanent employment would be required for operation and maintenance of the wells, pipelines, and ancillary facilities. Local workers are expected to be used for these tasks.
It can be assumed that there would be a population of “non-local” construction workers that would work in conjunction with local workers within the Project Area. The non-local population would consist of short-term (construction and drilling) and local residents would secure the majority of the long-term employment. The majority of non-local settlement is likely to occur in Vernal, Utah. Due to a shortage of housing, in many cases short-term workers would utilize motel accommodations or stay in recreational vehicles rather than long-term rental housing such as apartments or houses. Non-local populations contribute to the local economy of these cities through the purchase of motels, housing, or other accommodations, as well as meals, groceries, gasoline, and various other goods and services. Due to increased non-local populous, there would be a corresponding increase to the service sector.

The average salaries in the State of Utah for natural resources and mining employees (including the oil and gas) are higher than any other non-agricultural employment sector in the State. In 2004, oil and gas employees earned approximately $4,606 per month, which is 44% higher than the Uintah County average ($2,592) (Utah Department of Workforce Services 2004; GOPB 2006).

Community Services

The proposed development outlined in the Proposed Action, when implemented over a period of four years, could be handled by the existing local work force. Thus the impact to existing infrastructure such as public schools, law enforcement, fire protection, housing, medical and social services would not appreciably increase. However, the cumulative effect could result in increased pressure to these support institutions (refer to Section 4.3.3.19).

It is possible that local emergency service departments within Uintah County may be asked to provide assistance in the unlikely event of a serious accident in the Project Area. Kerr-McGee would strive to reduce the risk of serious accidents through employee training programs, and by compliance with applicable OSHA regulations.

Local Government Fiscal Conditions and Revenues from Oil and Gas Activities

Mineral Royalties

Federal mineral royalties are collected by the Mineral Management Services, U.S. Department of Interior for oil and gas produced on federal leases. Federal royalties are collected at a fixed rate of 12.5 percent and are split evenly between the federal government and the State of origin.

Utah’s share of the royalties is distributed in the following manner: 40 percent to the Utah Department of Transportation (UDOT), which is then distributed to the County Special Service Districts, 32.5 percent to the Permanent Community Impact Fund (PCIF), and the remainder to various State Departments. PCIF funds are used to make needed improvements to facilities and services that are traditionally provided by government. Uintah county and the municipalities affected by the Proposed Action (e.g. Vernal and surrounding communities) would be eligible for these funds. Between 2001 and 2005 Uintah County generated 35.6 million dollars in PCIF funds. The Community Impact Board (CIB) allocated 25.2 million dollars back to the County. Uintah County is the largest contributor to and recipient of PCIF funds in Utah (Uintah County Special Service District 2006).
Kerr-McGee estimates that over the approximately 30 year life of a single well in the Bonanza area, that well will produce approximately 90 thousand cubic feet (mcf) of gas per day. According to the Energy Information Administration, the average price of natural gas over this same time period will be approximately $5.23 per mcf (Energy Information Administration 2006). Based upon these production numbers, Table 4-7 provides an estimate of the federal mineral royalties that will be collected over the life of the project, and how the royalties will likely be distributed.

### Table 4-7. Estimated Federal Mineral Royalty Distribution

<table>
<thead>
<tr>
<th>Total Federal Mineral Royalty</th>
<th>State Allocation</th>
<th>UDOT/Uintah County Special Service Districts</th>
<th>PCIF</th>
<th>Other Utah State Departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>$57,340,4008</td>
<td>$28,670,043</td>
<td>$11,468,017</td>
<td>$9,317,763</td>
<td>$7,884,263</td>
</tr>
</tbody>
</table>

On State land, specific royalty payments are determined by lease agreements. Standard royalty payments are 12.5 percent to 18 percent of the production value. For the purposes of this analysis, a minimum royalty rate of 12.5 percent is used. Under the Proposed Action five wells would be located on State land. Mineral royalties collected on State of Utah lands would yield approximately $2,577,082.

#### Severance Tax

In Utah, severance tax is collected by the Utah State Tax Commission. Currently State levied severance tax is collected at a split rate. For example, the first $1.50 per mcf of gas is taxed at a rate of three percent; any additional revenue is taxed at a rate of five percent. Based upon Kerr-McGee’s expected production, over the life of the project, approximately $21,445,465 would be paid to the Utah General Tax Fund.

#### Conservation Tax

A conservation tax is collected by the Utah State Tax commission at a rate of two-tenths of one percent (.002) of the value of oil and gas produced, sold, or transported from any Utah field. The conservation tax from gas receipts in the Project Area would be approximately $968,983.

#### Sales and Property Tax

Sales and property tax revenue are used by local cities and counties to fund important local services and facilities. Sales taxes are paid by oil and gas operations when purchase of equipment, materials, supplies, and basic goods and services are made in the local area.

Property taxes are based upon the value added to the property leased for gas operations. Property values increase through the construction of wells, pipelines, and associated facilities. Consequently, property tax would increase though the construction phase of the project until the Project Area was fully developed and would decrease as facilities located in the Project Area are dismantled and reclaimed.

Table 4-8 provides a summary of royalties and taxes that would be generated under the Proposed Action.
Table 4-8. Summary of Royalties and Tax Revenues Expected Under the Proposed Action

<table>
<thead>
<tr>
<th>Type of Royalty or Tax</th>
<th>Total Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Mineral Royalties</td>
<td>$57,340,086</td>
</tr>
<tr>
<td>State Mineral Royalties</td>
<td>$2,577,082</td>
</tr>
<tr>
<td>State Severance Tax</td>
<td>$21,445,465</td>
</tr>
<tr>
<td>State Conservation Tax</td>
<td>$968,983</td>
</tr>
<tr>
<td>County Property and Sales Taxes</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

All revenues are calculated on 30 year production life with a minimum production rate of 90 mcf per well/day.

4.2.19.2 Alternative B - No Action

Under Alternative B, the No Action alternative, the well development as proposed would not be approved. Five wells would be developed within this Project Area on State lands.

The No Action Alternative would create additional employment opportunities in the Uinta Basin during the construction phase and over the production lifetime (approximately 30 years). Employment opportunity created by the No Action alternative would be considerably less than job opportunity created by the Proposed Action. Severance, conservation, and sales taxes would still be collected; however, revenues would be substantially less than those that would be generated under the Proposed Action.

Table 4-9 provides a summary of royalties and tax revenues that would be generated under the No Action alternative.

Table 4-9. Summary of Royalties and Taxes Revenues Under the No Action Alternative

<table>
<thead>
<tr>
<th>Type of Royalty or Tax</th>
<th>Total Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Mineral Royalties</td>
<td>$2,577,083</td>
</tr>
<tr>
<td>State Severance Tax</td>
<td>$912,573</td>
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<tr>
<td>State Conservation Tax</td>
<td>$41,233</td>
</tr>
<tr>
<td>County Property and Sales Taxes</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

4.2.19.3 Alternative C – Proposed Action with Additional Protection Measures

The impacts outlined and assessed in section 4.2.19.1 above for the Proposed Action would be the same for Alternative C.

4.2.20 WILDERNESS CHARACTERISTICS

The proposed development would include 25 wells pads and associated development within the wilderness characteristics area. Surface disturbance related to the pads, associated pipelines and roads would be approximately 65 acres, or less than two percent of the 3,475 acres of wilderness characteristics within the Project Area.

Under the Proposed Action, any disturbance that would occur as a result of the construction and production of proposed roads, wells, and associated ancillary facilities would cause a direct loss of naturalness, solitude, and opportunities for primitive, unconfined recreation. Impacts to wilderness characteristics would last the life of the project until reclamation is complete. After
plugging and abandonment of the wells, and successful reclamation, lands would regain wilderness characteristics.

4.2.20.1 Alternative B – No Action

The No Action alternative would limit disturbance to about 13 acres on State land. As no new wells would be drilled on BLM-administered public lands, there would be no adverse impacts on areas that have wilderness characteristics within the Project Area. However, BLM would be required to provide reasonable access to the proposed wells identified for State lands. Should access to those well sites involve public land having wilderness characteristics, then there would be direct impacts to wilderness characteristics proportional to the acreage disturbed by the access.

4.2.20.2 Alternative C – Proposed Action with Additional Protection Measures

The impacts outlined and assessed in section 4.2.21.1 above for the Proposed Action would be the same for Alternative C.

4.2.21 MITIGATING MEASURES

4.2.21.1 Proposed Action

Under the Proposed Action, the following mitigation measures would be implemented:

Cultural Resources

If deemed appropriate by the SMA/AO, construction activities within specific portions of the buried pipeline and power line corridors would be monitored for the presence of buried cultural resources.

Should any significant cultural resource be located, all construction activities would immediately cease and the SMA/AO would be notified for additional guidance and direction.

Threatened, Endangered and Candidate Species

Prior to any project-related surface disturbance, all locations proposed for surface disturbance would be examined by a wildlife biologist and botanist approved by the applicable SMA to determine if any federally threatened or endangered species are present. If present and prior to initiating any surface disturbance activities, the SMA and the FWS would implement appropriate avoidance measures.

Black Footed Ferret

If construction would be planned in or near an active prairie dog complex in the future, BLM would identify the potential for the presence of black-footed ferrets during the APD on-site inspection. The proponent then shall notify BLM before construction is to begin, so BLM would determine whether any further monitoring would be necessary.
Bald Eagle

1. Temporary activities within 1.0 mile of nest sites will not occur during the breeding season of January 1 to August 31, unless the area has been surveyed and determined to be unoccupied.
2. Temporary activities within 0.5 mile of winter roost areas, e.g., cottonwood galleries, will not occur during the winter roost season of November 1 to March 31, unless the area has been surveyed and determined to be unoccupied.
3. No permanent infrastructure will be placed within 1.0 mile of nest sites.
4. No permanent infrastructure will be placed within 0.5 mile of winter roost areas.
5. Contact UDWR for removal of carrion from roadways within bald eagle foraging range.
6. Avoid loss or disturbance to large cottonwood gallery riparian habitats
7. Utilize directional drilling to avoid direct impacts to large cottonwood gallery riparian habitats:
   a. When employing directional drilling techniques, ensure that drilling does not intercept or degrade alluvial aquifers
8. Re-vegetate with native species indigenous to the area and non-native species that are not likely to invade other areas, all areas of surface disturbance within riparian areas and/or adjacent uplands.

Uinta Basin Hookless Cactus

In order to minimize effects to the federally threatened Uinta Basin hookless cactus, the Bureau of Land Management (BLM) in coordination with the U.S. Fish and Wildlife Service (Service), developed the following avoidance and minimization measures. Integration of and adherence to these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance) are in compliance with the Endangered Species Act (ESA). Kerr-McGee would adhere to the following avoidance and minimization measures:

1. Pre-project habitat assessments would be completed across 100 percent of the project disturbance area within potential habitat\(^4\) prior to any ground disturbing activities to determine if suitable Uinta Basin hookless cactus habitat is present.
2. Within suitable habitat\(^5\), site inventories would be done to determine occupancy.

   Inventories:
   a. Must be conducted by qualified individual(s),
   b. Would be conducted in suitable and occupied\(^6\) habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected, and during appropriate flowering periods:
      i. *Sclerocactus brevispinus* surveys should be conducted March 15\(^{th}\) to

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\(^4\) *Potential habitat* is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment.

\(^5\) *Suitable habitat* is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain Uinta Basin hookless cactus. Habitat descriptions can be found in the U.S. Fish and Wildlife Service’s 1990 Recovery Plan and Federal Register Notices for the Uinta Basin hookless cactus (http://www.fws.gov/endangered/wildlife.html).

\(^6\) *Occupied habitat* is defined as areas currently or historically known to support Uinta Basin hookless cactus; synonymous with “known habitat.”
June 30th, unless extended by the BLM

ii. Sclerocactus wetlandicus surveys can be done any time of the year, provided there is no snow cover,

c. Would occur within 115 feet from the centerline of the proposed right-of-way for surface pipelines or roads; and within 100 feet from the perimeter of disturbance for the proposed well pad including the well pad,

d. Would include, but not be limited to, plant species lists and habitat characteristics, and

e. Would be valid until March 15th the following year for Sclerocactus brevispinus and one year from the survey date for Sclerocactus wetlandicus.

3. Design project infrastructure to minimize impacts within suitable habitat:

a. Reduce well pad size to the minimum needed, without compromising safety,

b. Limit new access routes created by the project,

c. Roads and utilities should share common right-of-ways where possible,

d. Reduce width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,

e. Place signing to limit off-road travel in sensitive areas,

f. Stay on designated routes and other cleared/approved areas, and

g. All disturbed areas would be re-vegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas.

4. Within occupied habitat, project infrastructure would be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:

a. Follow the above (#3) recommendations for project design within suitable habitats,

b. Buffers of 100 feet minimum between the edge of the ROW (roads and surface pipelines) or surface disturbance (well pads) and plants and populations would be incorporated,

c. Surface pipelines would be laid such that a 100 foot buffer exists between the edge of the ROW and the plants, use stabilizing and anchoring techniques when the pipeline crosses the habitat to ensure the pipelines don’t move towards the population,

d. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,

e. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,

f. Designs would avoid concentrating water flows or sediments into occupied habitat,

g. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and

h. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.

5. Occupied Uinta Basin hookless cactus habitats within 100 feet of the edge of the surface pipelines’ right-of-ways, 100 feet of the edge of the roads’ right-of-ways, and 100 feet from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring would include annual plant surveys to determine plant
and habitat impacts relative to project facilities. Annual reports would be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures would be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service.

6. Reinitiation of section 7 consultation with the Service would be sought immediately if any loss of plants or occupied habitat for the Uinta Basin hookless cactus occurs as a result of project activities.

7. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures would be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

8. No herbicide spraying would be allowed within 300 feet of Uinta Basin hookless cactus individuals. Any weed control work to be done in suitable and/or occupied habitat for this species would be completed by hand.

*Colorado River Fish*

Depending on the water year, larval fish may be present in the Green, Colorado, Gunnison, and Yampa Rivers from as early as April 1 to as late as August 31 (earlier in dry years; later in wet years)

5. To avoid entrainment, water should be pumped from an off-channel location – one that does not connect to the river during high spring flows. An infiltration gallery constructed in a BLM and Service approved location is best.

6. If the pump head is located in the river channel where larval fish are known to occur, the following measures apply:
   a. the pump would not be situated in a low-flow or no-flow area as these habitats tend to concentrate larval fishes;
   b. the amount of pumping would be limited, to the greatest extent possible, during that period of the year when larval fish may be present (see above); and
   c. the amount of pumping would be limited, to the greatest extent possible, during the pre-dawn hours as larval drift studies indicate that this is a period of greatest daily activity.

7. All pump intakes would be screened with ¼” mesh material.

8. Any fish impinged on the intake screen would be reported to the Service (801.975.3330) and the Utah Division of Wildlife Resources:

   **Northeastern Region**
   152 East 100 North, Vernal, UT 84078
   Phone: (435) 781-9453

**Special Status Bird Species, including Raptors**

*Raptors*

Prior to any construction between 1 January and 31 August, all precipitous areas and treed areas within 0.5 mile of proposed construction sites would be surveyed for the presence of raptor nests.
If occupied raptor nests were found, construction, drilling and completion would not occur within species-specific buffer radii during the species-specific active nesting season, unless topographic or vegetative characteristics obscured visual and auditory impacts from the nest. If surveys identify raptor nests in the Project Area, species-specific buffer radii and timing restrictions (Table 2-5, below) would be applied as directed by the AO. No permanent facilities would be constructed within 0.25 mile of the nest site.

Table 2-5. Spatial and Timing Limitations for Active Raptor Nests (USDI-BLM 1994)

<table>
<thead>
<tr>
<th>Species</th>
<th>Spatial Buffer around Active Nest</th>
<th>Timing Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferruginous Hawk</td>
<td>0.5 mi</td>
<td>March 1 – July 15 No permanent structures constructed within</td>
</tr>
<tr>
<td>Burrowing Owl</td>
<td>0.5 mi</td>
<td>April 1 – August 15</td>
</tr>
<tr>
<td>Osprey</td>
<td>0.5 mi</td>
<td>April 1 – July 15</td>
</tr>
<tr>
<td>Swainson’s Hawk</td>
<td>0.5 mi</td>
<td>April 1 – July 15</td>
</tr>
<tr>
<td>Northern Goshawk</td>
<td>0.5 mi</td>
<td>April 15 – August 20</td>
</tr>
<tr>
<td>Short-eared Owl</td>
<td>0.5 mi</td>
<td>April 10 – June 15</td>
</tr>
<tr>
<td>Prairie Falcon</td>
<td>0.5 mi</td>
<td>April 1 – July 15</td>
</tr>
<tr>
<td>Merlin</td>
<td>0.5 mi</td>
<td>April 15 – June 25</td>
</tr>
<tr>
<td>American Kestrel</td>
<td>0.5 mi</td>
<td>May 1 – June 30</td>
</tr>
<tr>
<td>Turkey Vulture</td>
<td>0.5 mi</td>
<td>May 15 – August 15</td>
</tr>
<tr>
<td>Cooper’s Hawk</td>
<td>0.5 mi</td>
<td>May 1 – August 15</td>
</tr>
<tr>
<td>Sharp-shinned Hawk</td>
<td>0.5 mi</td>
<td>Jun 20 – August 15</td>
</tr>
<tr>
<td>Northern Harrier</td>
<td>0.5 mi</td>
<td>April 1 – July 15</td>
</tr>
<tr>
<td>Red-tailed Hawk</td>
<td>0.25 mi</td>
<td>April 1 – July 15</td>
</tr>
<tr>
<td>Great Horned Owl</td>
<td>0.25 mi</td>
<td>February 1 – May 15</td>
</tr>
<tr>
<td>Long-eared Owl</td>
<td>0.5 mi</td>
<td>March 15 – June 15</td>
</tr>
<tr>
<td>Mexican Spotted Owl</td>
<td>0.5 mi</td>
<td>March 1 – August 1</td>
</tr>
</tbody>
</table>

To minimize possible raptor:vehicle collisions in the greater Project Area, reports of carrion along roadways would be reported to UDWR and guidance obtained as to how to safely dispose of the carcass.

**Mexican Spotted Owl**

In order to protect Mexican spotted owl and their habitat the following survey and protection protocols would be put into effect: No surface disturbing activities would be allowed within
“good” and “fair” habitat designations until the end of the two survey seasons in accordance with USFWS protocol. If MSO are documented, BLM would consequently follow USFWS protocol for Protected Activity Center (PAC) establishment. With the exception of canyon habitat, well pad construction and drilling would be allowed within the 0.5 mile buffer after the first season of surveys is completed, outside of the timing restriction and only if no owls have been detected. The second season of surveys would still be required for these 0.5 mile buffer areas. If no owls have been detected at the completion of the two seasons of calling surveys, the timing restriction shown in Table 2-5 above would no longer be required for the areas of “good” and “fair” habitat, or the 0.5 mile buffer. However, if more than four years have elapsed between the end of the two seasons of survey and the initiation of any Proposed Action, then another complete inventory would be required prior to any surface disturbing activities.

**Greater Sage-grouse**

In order to protect greater sage-grouse and their habitat, prior to any construction between March 15 and May 15, all sagebrush habitat within a two-mile radius of proposed construction sites would be surveyed for the presence of sage-grouse leks. If sage-grouse leks were located, surface disturbance would not occur within a two-mile radii buffer during the breeding/nesting season (March 15 to June 15). No permanent facilities would be allowed within 1,000 feet of any identified greater sage-grouse leks.

**Livestock Grazing**

No roads, pipelines, well pads or other gas facilities would be placed within a 660-feet (200-meter) distance of existing livestock facilities, such as corrals or watering facilities. If there is no means to avoid these facilities, mitigation to replace them would be implemented, as directed by the AO.

**Paleontology**

Because the entire Project Area has a high potential for producing fossil material, on-site paleontological surveys would be conducted before all ground disturbing activities (roads, pipelines, well sites, staging areas, etc.) The exceptions would be where Quaternary alluvium (Condition 3) is thick enough to cover condition 1 formations (Uinta and Duchesne River Formations). After the paleontologic surveys are completed, associated reports would be submitted to the SMA/AO for review and clearance. Should exceptional or scientifically important fossil resources be located, the AO would make site-specific recommendations for impact avoidance and/or paleontologic monitoring during construction. Methods of avoidance would include one or a combination of the following:

- Re-location of the well site or re-routing of the access road/pipeline corridor away from the fossil resource
- Directional drilling (where feasible) of the well
- Elimination of the location from the overall development plan
- If deemed appropriate by the SMA/AO a paleontologist would be on site during construction to monitor for any paleontological resources.
4.2.21.2 Alternative B – No Action

Surface disturbance associated with Alternative B, No Action, would involve the development of five wells on State lands within the Project Area. Kerr-McGee’s Proposed Action commits to apply appropriate guidelines from the Gold Book, Onshore orders, existing regulations, and API welding guidelines. Kerr-McGee also commits to additional actions to reduce impacts to sensitive resources. Kerr-McGee does not differentiate between surface ownership, thus it is assumed Kerr-McGee would apply these guidelines, regulations and orders to development on State lands. Additional measures could be considered as outlined below in 4.2.17.3, with the understanding that they would be recommendations; and any compliance would be voluntary on the part of Kerr-McGee.

4.2.21.3 Alternative C – Proposed Action with Additional Protection Measures

Alternative C was developed to outline and assess additional mitigation measures deemed reasonable and appropriate in response to the Proposed Action to further reduce and/or eliminate impacts to sensitive resource values. No additional mitigating measures would be needed for Alternative C – Proposed Action with Additional Protection Measures.

4.2.22 RESIDUAL IMPACTS

4.2.22.1 Proposed Action

The Proposed Action with the applicant-committed measures as shown would reduce impacts as outlined in this chapter. However, even with these applications, unintentional actions and accidents could occur, affecting individual plant and/or animal species and the resources on which they depend.

4.2.22.2 Alternative B – No Action

Alternative B, the No Action alternative, would have similar residual impacts as the Proposed Action; however at a much reduced scale. The proposed disturbance would be limited to two State sections in the “blocked” portion of the Project Area, thus concentrating the impacts to about 13 acres. The residual impacts under this alternative would be minimal compared to the Proposed Action.

4.2.22.3 Proposed C – Proposed Action with Additional Protection Measures

With the application of additional protection measures as set out in this alternative, residual impacts would be totally removed or further minimized from what could occur under the Proposed Action.

4.2.23 MONITORING AND COMPLIANCE

Monitoring and compliance of the subsequent terms and conditions applied to alternative selected would help determine the effectiveness of applicant-committed measures and/or additional mitigation measures in minimizing or negating impacts to sensitive resource values. Commitment to develop and implement an SPCC plan would set actions in place to control spills
and/or leaks; aggressive invasive and noxious weed control strategy set out in PUPs would ensure rangeland resources, e.g., vegetation, water, soils, dependent wildlife habitat would not be permanently degraded.

4.3 CUMULATIVE IMPACTS

Cumulative impacts result from the incremental impacts of an action when added to past, present, and reasonably foreseeable future actions, regardless of who takes the action. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

This chapter discusses cumulative impacts as the incremental effect to specific resources or issues that would occur from the Proposed Action or No Action Alternative in conjunction with other cumulative actions. In support of the cumulative impact discussion, this chapter provides discussion on past and present oil and gas activities in the Uinta Basin, both of which serve as introductions to the outlook for reasonably foreseeable development (RFD) in the Project Area and the greater Uinta Basin. The cumulative impact and RFD analysis is based upon the level of activities and actions identified in the Draft Vernal RMP (BLM 2005). Within the Draft Vernal RMP, projected oil and gas activity would be the most significant activity expected in the Vernal Field Office area. Other significant activities would be livestock grazing, vegetative management through prescribed burning, and recreational projects. The Cumulative Impact Analysis Area (CIAA) for most resources is Uintah County and the neighboring Duchesne County to the west. For some resources, the CIAA is much larger.

4.3.1 OIL AND GAS

The Uinta Basin is a significant source of natural gas and oil, and it is currently one of the most active oil and gas producing areas in the onshore U.S. In September 2004, the Utah BLM’s quarterly oil and gas lease sale broke the record of most acreage, revenues, and bidders for any lease sale. The focus of the bidding seemed to be both on known producing areas in the Uinta Basin and in frontier areas in the central portion of the State. In the case of the Uinta Basin, past exploration has been in shallow areas up to 8,000 feet. Companies are just now beginning to tap the huge gas reserves that are 10,000-20,000 feet deep due to new technology and economics (BLM 2004b).

Oil and gas development is at an all-time high in the basin, with more rigs operating, and more applications for permit to drill (APDs) being processed than ever before. For example, over half (i.e., 8,737 wells) of the total oil and gas wells drilled in Utah between 1911 and November of 2000 were drilled within the Uinta Basin. APDs and ROW applications processed by the BLM Vernal Field Office have illustrated a significant upward trend, estimated to be approximately 15 percent annually. In support of an ongoing land use planning effort, a mineral potential report was prepared (BLM, 2002b). In that report it was estimated that a total of about 6,530 wells could be drilled in the Uinta Basin by various oil and gas operators over a 15-year period (BLM 2002b), of which about 67 percent would be new gas wells. Table 4-10 shows field development documents that are recently completed or currently ongoing in the Vernal Field Office. These documents assess anticipated development strategies in the specific fields.
### Table 4-10. Proposed Oil and Gas NEPA Projects in Vernal Field Office

<table>
<thead>
<tr>
<th>Project</th>
<th>Anticipated Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDG Development EIS</td>
<td>ROD signed August 7, 2006</td>
</tr>
<tr>
<td>EnCana North Chapita Development EA</td>
<td>DR signed March 1, 2006</td>
</tr>
<tr>
<td>QEP Greater Deadman Bench EIS</td>
<td>December 2006</td>
</tr>
<tr>
<td>EOG Chapita Wells Stagecoach EIS</td>
<td>December 2006</td>
</tr>
<tr>
<td>Gasco Development EIS</td>
<td>October 2007</td>
</tr>
<tr>
<td>Enduring Resources West Bonanza Area Development EA</td>
<td>DR signed July 18, 2006</td>
</tr>
<tr>
<td>Dominion / Mak J (LCU, BPU, HCU) EA</td>
<td>Winter 2006</td>
</tr>
<tr>
<td>Kerr-McGee Love Unit EA</td>
<td>October 2006</td>
</tr>
<tr>
<td>Kerr-McGee Bonanza Area EA</td>
<td>October 2006</td>
</tr>
<tr>
<td>Inland (Newfield) Castle Peak and 8-Mile Flat EIS</td>
<td>ROD signed August 24, 2005</td>
</tr>
<tr>
<td>Enduring Resources Rock House EA</td>
<td>Fall 2006</td>
</tr>
<tr>
<td>Dominion’s King Canyon EA</td>
<td>Spring 2007</td>
</tr>
<tr>
<td>Enduring Resources Big Pack EA</td>
<td>Summer 2007</td>
</tr>
<tr>
<td>EOG North Alger EA</td>
<td>Winter 2006</td>
</tr>
<tr>
<td>Gasco Riverbend EA</td>
<td>September 2006</td>
</tr>
<tr>
<td>Gasco Wilkin Ridge EA</td>
<td>Spring 2007</td>
</tr>
</tbody>
</table>

* Number of proposed wells includes best estimate at the time of the publication of this EA.

Exploratory drilling is currently proposed in the western and southwestern portions of the Uinta Basin, including BLM, Tribal and National Forest lands. Exploration projects consist of larger and more expensive prospects. Production of exploratory wells typically lags discovery by many years. These exploratory wells are typically characterized by larger, deeper, more remote locations requiring greater per-well expenditures, potential delays in infrastructure access and, therefore, greater financial risk (Linden 2003).

Future oil and gas development in the Uinta Basin will depend upon the feasibility of exploration, as determined by the underlying geology and further infill development projects within the Basin. Future development will be dependent upon the geologic feasibility each prospect, the cost to develop the resources, and engineering technological advancements. Development of Tribal lands will continue and perhaps increase as exploratory wells are drilled in the Hill Creek Extension. Drilling in the Ashley National Forest will likely increase as a result of new leasing and management strategies. However, the level of development on Tribal and National Forest System lands is unknown.

The cumulative scenario for this EA is based on the estimated total number of wells anticipated to be drilled over the coming 15 years in the Uinta Basin, e.g., 6,530. The 95 wells proposed in the Bonanza project would constitute approximately 1 percent of the cumulative scenario. Kerr-McGee’s proposed project would constitute about 2 percent of the total number of natural gas wells anticipated to be drilled in the Basin over the coming 15 years. The following surface disturbance assumptions have been applied regarding future construction associated with oil and gas development and power lines:

- Surface disturbance for a well pad: 2.4 acres;
- Surface disturbance for an access road, assuming 0.2 mile/well: .73 acres/well;
- Surface disturbance for pipelines and flowlines: 0.47 acres/well;
- Surface disturbance for transmission lines: 0.79 acre surface disturbance/well
- Surface for compressor stations: 2 acres;
- Surface disturbance for water pipelines: equals disturbance for oil well roads; and
- Surface disturbance for new sales pipelines: 0.47 acres for every new well.
- Surface disturbance for powerlines: 0.25 acre per mile of powerline

Based on these assumptions, the additional surface disturbance of the cumulative scenario for oil and gas development would be 28,835 acres. The details are shown in Table 4-11.

### Table 4-11. Cumulative Oil and Gas Development Surface Disturbance

<table>
<thead>
<tr>
<th># Wells</th>
<th>Well Pads (acres)</th>
<th>Access Roads (acres)</th>
<th>Total Pipelines (acres)</th>
<th>84 Compressor Stations (acres)</th>
<th>Total Disturbance (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,530</td>
<td>15,672</td>
<td>4,767</td>
<td>8,228</td>
<td>168</td>
<td>28,835</td>
</tr>
</tbody>
</table>

*Well pad disturbance is overestimated, since it assumes one well per pad. In some cases, two or more wells may be drilled from a single well pad.*

#### 4.3.2 LIVESTOCK GRAZING

Livestock grazing is currently a permitted use of public lands within the Vernal Field Area. Although some minor changes may be expected over the next few years, it is reasonable to expect that livestock grazing would continue. Allocated AUMs would remain essentially unchanged; however, based on use trends over the past seven years actual use may decline based on individual grazing permittee’s operations and market conditions. The Vernal Field Office (VFO) currently administers grazing on 147 allotments. The 147 allotments within the VFO boundary designated for livestock grazing encompass approximately 2,268,120 acres (1,696,416 acres of BLM land; 571,704 acres of private, State, and Tribal lands). Within the grazing allotments managed by the Vernal Field Office, 153,370 AUMs are allocated for livestock.

#### 4.3.3 VEGETATIVE TREATMENTS

According to the draft Vernal RMP, prescribed burning will continue as BLM’s primary method of vegetative treatment in the Vernal Resource Area. This treatment method results from BLM’s acknowledgement of and directives to use fire as an integral tool to maintain and/or improve native rangelands. To meet management objectives, BLM projects prescribed fires on 155,425 acres per decade, or an average of 15,542 acres per year. Target vegetation communities would include pinyon-juniper, oak, aspen, and conifer. Although fire would initially destroy plant material, the vegetation would recover and return to an age-diverse, and thus healthier plant communities. Prescribed burning disturbance would not directly overlap spatially with oil and gas disturbance because of obvious safety considerations. Nevertheless, both activities would cumulatively remove vegetation within the Vernal Resource Area. However, because vegetative
treatments would be temporary, and would not result in a change in land use, they are not
considered further in the cumulative effect on land use activities.

4.3.4 RECREATION

Reasonable foreseeable recreation decisions potentially affecting cumulative impacts in the
Vernal RMP area could include likely designation of Backcountry Byways, ACECs, WSRs, and
Special Recreation Management Areas (SRMAs), as well as trail, campground, and cabin
development. These designations and developments would have beneficial impacts on recreation,
but would also affect the management of other resources in the Cumulative Impact Analysis Area
(CIAA).

4.3.5 RESOURCE-SPECIFIC CUMULATIVE IMPACTS

4.3.5.1 Air Quality

Cumulative air quality impacts are defined as the combination of emissions resulting from the
Proposed Action, existing nearby permitted sources, and Reasonably Foreseeable Development
(RFD) within the region. Areas of concern include the Uinta Basin, the High Uintah Wilderness
Area, as well as nearby mandatory federal PSD Class I areas such as Arches and Canyonlands
National Parks and Flat Tops Wilderness. Potential Air Quality Related Value (AQRV) impacts
to sensitive areas include regional impacts on visibility, total nitrogen and sulfur deposition, and
Acid Neutralization Capacity (ANC).

It is anticipated that the pace and level of natural gas development within this region of the State
will continue over the next few years. The Draft EIS and Resource Management Plan for the
Vernal Field Office (BLM 2004) has recently addressed the impacts to air quality in the Uinta
Basin and surrounding areas of special concern, considering both existing permitted sources and
an extended look at development over a fifteen year timeframe as described in the mineral
potential report. The development scenario were based on BLM’s proposed plans for resource
development, which included estimates for the number of wells drilled for oil and gas,
compressor stations, and pipelines, along with other foreseeable development activities by non-
BLM entities. In general, results from this analysis indicate that existing air quality in the region
is good, and based on Reasonable Development Scenarios in conjunction with existing sources, is
not of great concern.

In particular, cumulative well development activities in the Uinta Basin are not expected to affect
attainment of NAAQS standards or regional PSD increments. Existing and RFD stationary
sources, including compressor engines and turbines, while of greater concern, are anticipated to
be adequately spaced to allow for favorable dispersion conditions. A cumulative effects analysis
on visibility impairment within nearby Class I and selected Class II areas found that potential
changes in visibility and acid deposition were within acceptable guidelines.

The Proposed Action would cumulatively contribute to disturbances occurring immediately
adjacent to the Project Area and within the greater Uinta Basin. In general, the increase in
emissions associated with the Proposed Action will be localized, in some cases temporary
(construction and drilling phases), and on a limited scale in comparison with regional emissions.
Therefore, it is unlikely that the Proposed Action and Alternative C would strongly impact the
cumulative air quality of the region. The No Action alternative would not impact the cumulative
air quality of the region, simply due to the small scale of activities (e.g., five wells) associated
with this alternative.
4.3.5.2 Areas of Critical Environmental Concern

Currently there are no ACECs in the Project Area, and therefore the Alternatives would have no cumulative impacts on these resources. Cumulative impacts to the values for which the Vernal Draft RMP considers designating the White River potential ACEC are below.

The following reasonably foreseeable projects would have an impact on the White River potential ACEC, depending on the alternative considered in the Draft RMP: Enduring Resource’s Rock House area, the RDG EIS, Enduring Resource’s West Bonanza EA, and the EOG Chapita Wells – Stagecoach EIS. Cumulative impacts from the implementation of mineral resource development within and outside of BLM-administered lands within the Uinta Basin “…could result in major adverse impacts to resource values in some areas, depending upon the alternative” (draft Vernal RMP, p. 4-353). However, there would be minimal additive impact from the proposed development within the Bonanza Project Area due the lack of development within the White River Corridor and the design and operation strategies that would minimize development impacts to visually sensitive areas (e.g., install mufflers on engines, design roads and facilities factoring in existing topography and vegetation to screen development, avoid construction on ridgelines, etc). Alternative C would result in the same impacts. Alternative B, the No Action alternative, would limit development to State lands, reducing anticipated impacts by 95 percent. Specifically, only one well would be proposed for State lands adjoining the river corridor.

4.3.5.3 Cultural Resources

Based on project commitment and requirements for cultural site avoidance, direct adverse cumulative impacts (including the Proposed Action and Alternatives B and C) on cultural resources are not expected. However, increased human activity in the Project Area could cumulatively contribute to indirect impacts on cultural resources (e.g., accidental destruction of artifacts and sites, increase in theft or vandalism, increase in audio and visual impacts on the cultural resource environment). Furthermore, the effects of increased drilling and supporting activities would negatively affect the landscape in which the cultural resources exist. These impacts would incrementally and cumulatively add to natural and human-induced cultural resource loss and degradation.

4.3.5.4 Floodplains

Adherence to EO 11988 and applicant commitment to minimize impacts to floodplains through proper well site and road design and operation, closed-loop systems, containment structures on pads in drainages, SPCC strategy plans, etc., cumulative impacts (including this proposal and its alternatives) are expected to effectively minimize the direct impacts to floodplains.

4.3.5.5 Invasive and Noxious Species

Invasive and noxious weed species is a major concern in the Basin. Weed Management Areas have been established involving interagency planning and coordination and treatment to search and destroy stands of invasive and noxious species. Under the Proposed Action and alternative C, the removal of 877 acres of upland vegetation types would have a relatively small-scale impact on vegetation resources. Yet in the context of cumulative impact analyses, each acre of vegetation disturbance adds to a cumulative impact by increasing erosion, incrementally adding to overall native vegetation loss, and potentially increasing invasion of noxious weeds. Under the RFD scenario, 28,835 acres are expected to be disturbed. The Proposed Action and Alternative C
would both be approximately 3% of that total. With applicant-committed measures to aggressively treat infestations, and steps to maximize interim and final reclamation it is expected that the cumulative impacts (including this proposal and its alternatives) would result in optimal control of these species.

4.3.5.6 Threatened, Endangered and Candidate Plant Species

Public lands involving TEC plant species habitats have been leased with terms and conditions to protect any species and its habitat. However, continued encroachment on these habitats without understanding what it would take to restore them if altered or what size habitat is needed to ensure sustainability could impact these species and their habitats. However, incorporation of conservation measures/practices to moderate development in these areas and afford protective distances from proposed development to plants and/or their occupied habitats, minimization of disturbance in suitable habitat all combine to reduce cumulative impacts. The proposed conservation measures outlined in Alternative C, Proposed Action with Additional Protection Measures, would further minimize anticipated cumulative impacts to the Uinta Basin hookless cactus.

4.3.5.7 Threatened, Endangered and Candidate Animal Species

Public lands involving TEC animal species and their habitats have been leased with terms and conditions to protect such species and their habitats. However, continued encroachment on these habitats would displace individuals to other habitat, including less suitable habitats; thus affecting their overall health and wellbeing and long-term sustainability. As with TEC plants above incorporation of conservation measures/practices to moderate development in these areas at key stages in their life cycles (e.g., timing restrictions) and buffer distances from important habitat (nesting, foraging, etc.) all combine to reduce cumulative impacts. The proposed additional protection measures outlined in Alternative C, Proposed Action with Additional Protection Measures, would further minimize anticipated cumulative impacts to TEC animal species.

4.3.5.8 Water Quality (Surface and Ground)

The Proposed Action would result in a slight increase in erosion rates and sediment yield. If reclamation and mitigation measures are not successful, additional sedimentation and turbidity of surface water, including that in the White River, could result. The increased erosion, combined with increases associated with other oil and gas development, recreational activities including OHV use, livestock grazing, and mining, could have cumulative negative impacts on aquatic habitat within affected drainages.

Soil loss calculations reveal that an estimated 3,667 tons per year of additional erosion could be expected to occur as a result of the Proposed Action. If all additional sediment was delivered to the White River, the increased sediment loading to the White River at Ouray would be about 1.5%. The design features of the Proposed Action, including constructing stream crossings in a manner that would maintain stable bank conditions and the placement of sedimentation control devices along new roads and at drilling locations, would reduce the amount of additional sediment that actually reaches the ephemeral and perennial streams.

Project-related water consumption would deplete the flow in the White River by about 0.016% to 0.033%. Combined with other oil and gas activities, the cumulative depletion of the White River flow would still be less than 1%. Therefore, no diversions or alterations of flow regimes of the White River would occur.
The Proposed Action, combined with other oil and gas development and increased recreational activities, would slightly increase the chance that accidental spills of fuels, lubricants, and other petroleum products would occur and contaminate surface water or groundwater. Spills of fuels or produced fluids from well pads, pipelines, and compressor stations also have the potential to contaminate the shallow alluvial groundwater.

Mitigation measures and design features incorporated into the Proposed Action and the alternatives when appropriately applied to reasonably foreseeable development would have the potential to reduce the cumulative impacts to surface water quality by minimizing erosion and preventing spills. Continued strict adherence to existing Onshore Orders dealing with drilling, cementing and casing to prevent leaks into underground aquifers would successfully mitigate cumulative impacts to ground water resources.

4.3.5.9 Wetlands and Riparian

The Proposed Action and Alternatives B and C would result in similar indirect impacts to wetlands and riparian as outlined above for surface water quality. Adherence to BLM policies relative to development in riparian zones, proper drainage design and construction, construction and design features to reduce sediment loading of drainages; as well as successful interim and final reclamation strategies would effectively minimize cumulative impacts to the wetland and riparian resources from proposed development, including the Proposed Action and alternatives assessed in this document.

4.3.5.10 Wild and Scenic Rivers

Currently, no wild and scenic rivers exist within the Project Area, and implementation of the Proposed Action would have no cumulative impacts on these resources. The draft Vernal RMP (p. 4-353) States “Mineral resource development activity could result in the loss of outstanding remarkable values in some river corridors, depending upon the alternative.” If Congress were to designate Segment 2 of the White River into the National Wild and Scenic River System with a tentative classification of wild, all public lands within the corridor would automatically be withdrawn from mineral location and the public land laws. The reasonably foreseeable project that could impact the same stretch of eligible WSR is Enduring Resource’s Rock House EA. The Proposed Action and Alternative B, the Proposed Action with Additional Protection Measures, would not appreciably add to these cumulative impacts because Kerr-McGee’s would not develop within the White River Corridor and due to the commitment to minimize indirect impacts to the resource values associated with the corridor. Implementation of Alternative B, the No Action Alternative, would further reduce the cumulative impacts, as development would be limited to one well on State lands adjoining, but outside of the White River corridor.

4.3.5.11 Livestock Management

The impacts of the Proposed Action to rangeland resources would be the loss of 340 AUMs during the life of the project. This would have a relatively small-scale impact (less than 1%) on range resources and rangeland management, when compared to the overall forage assigned to grazing allotments within the Vernal Field Area. Increased roads within the Project Area would cumulatively contribute to difficulties in controlling livestock as more natural barriers to livestock movement are removed, and as more livestock use roads as travel routes. Furthermore, increased road and pipeline ROWs could contribute to changes in water flow, thereby reducing flows to livestock ponds. In addition, loss of vegetation and increased traffic and human activity in the
Project Area would cumulatively add to livestock displacement that is occurring throughout the Project Area as a result of other oil and gas projects, recreational activities, and other land uses. These past, present, and future traffic, construction activities, and other visual and noise impacts in the Project Area could cause livestock to move to adjacent undisturbed areas, thereby leading to additional livestock impacts on vegetation in those locations.

The removal of AUMs under the Proposed Action or Alternatives B or C would have a relatively small-scale impact on range resources and rangeland management when compared to overall forage available within the permitted allotments. The Vernal Field Office (VFO) currently administers grazing on 167 allotments. Of these, five grazing allotments (Dry Creek, Hoy Flat, Offield Mountain, South Pot Creek, and Wild Mountain–Colorado) are located entirely outside the VFO boundary and two allotments (Max Canyon and Blind Canyon) are located entirely on private land inholdings within the VFO boundary. The 153 of the 160 allotments regularly permitted for grazing within the VFO boundary designated for livestock grazing encompass approximately 2,216,764 acres (1,691,116 acres of BLM land; 545,887 acres of private, State, and tribal lands).

Within the grazing allotments managed by the Vernal Field Office, 146,220 animal unit months (AUMs) are allocated for livestock, but active permitted use for the 160 allotments is currently 137,897 AUMs. Therefore, given the disturbance for the cumulative scenario of 15,542 acres for vegetation management and 26,187 acres for oil and gas development, the loss of AUMs would be expected to be 3,477, a 2.4 percent reduction. Yet, in the context of cumulative impacts, each AUM lost incrementally contributes to overall long-term losses of livestock forage that are occurring from other past, present, and future oil and gas projects; livestock operations; recreational activities; and other land uses that result in vegetation loss or degradation. Increased roads within the Project Area would cumulatively contribute to difficulties in controlling livestock that are occurring throughout the CIAA as more natural barriers to livestock are removed, and as more livestock use roads as travel routes. Furthermore, increased road and pipeline ROWs could contribute to changes in water flow, thereby reducing flows to livestock ponds. These past, present, and future traffic increases, construction activities, and other visual and noise impacts could cause livestock to move to adjacent undisturbed areas, thereby leading to additional livestock impacts on vegetation in those locations.

4.3.5.12 Vegetation

Under the Proposed Action, the removal of 877 acres of upland vegetation types would have a relatively small-scale impact on vegetation resources. Yet in the context of cumulative impact analyses, each acre of vegetation disturbance adds to a cumulative impact by increasing erosion, incrementally adding to overall native vegetation loss, and potentially increasing invasion of noxious weeds. Under the RFD scenario, 28,835 acres are expected to be disturbed. The Proposed Action would be approximately 3% of that total.

4.3.5.13 Fish and Wildlife, including Special Status Species other than FWS Listed or Candidate Species, e.g., Migratory Birds

Under the Proposed Action, the removal of 877 acres of upland vegetation types would have a relatively small-scale impact on wildlife habitat. Yet in the context of cumulative impact analyses, each acre of vegetation disturbance adds to a cumulative impact by increasing erosion, incrementally adding to overall native vegetation loss, and potentially increasing invasion of noxious weeds. Under the RFD scenario, 28,835 acres are expected to be disturbed. The Proposed Action would be approximately 3% of that total. Ongoing and planned oil and gas
activities and other land uses within the Vernal Field Office would further reduce the amount of available cover, foraging opportunities, and breeding areas for a wide variety of wildlife trophic levels. Additional development could displace wildlife or preclude wildlife from using areas of more intensive human activity. In general, the severity of the cumulative effects would depend on factors such as the sensitivity of the species impacted, seasonal intensity of use, type of project activity, and physical parameters (e.g., topography, forage, and cover availability). The implementation of the Proposed Action or No Action alternatives, and the resulting long-term disturbance, is not likely to have an impact on wildlife populations, as a whole. However, in the context of cumulative impacts, any long-term surface disturbance would incrementally and cumulatively add to wildlife habitat losses and overall habitat fragmentation within the Project Area.

4.3.5.14 Soil Resources

Any land-disturbing activity that removes native vegetation and topsoil can result in an increase in erosion rates and sediment yield. Under the Proposed Action, the removal of 877 acres of upland vegetation types would have a relatively small-scale impact on soil resources. Yet in the context of cumulative impact analyses, each acre of disturbance adds to a cumulative impact by increasing erosion, incrementally adding to overall native vegetation loss, and potentially increasing invasion of noxious weeds. Under the RFD scenario, 28,835 acres are expected to be disturbed. The Proposed Action would be approximately 3% of that total. However, any increase in sediment yield must be acknowledged as incrementally and cumulatively adding to soil disturbance within the CIAA. Additional authorized actions (oil and gas development, livestock grazing, prescribed burning, and recreation) that could result in increased erosion and sediment yield within the CIAA are likely to occur. Of these potential soil-disturbing activities, existing and proposed roads are the features of highest concern. Unlike surface and buried pipelines, active roadways and well pads are not reclaimed, thus sediment yield from roads can continue at rates two to three times above background rates into the indefinite future. The Proposed Action would create an additional 24 miles of unpaved roadway and 95 well pads in the CIAA.

Rangeland Health Standard 1 States that “upland soils should exhibit permeability and infiltration rates that sustain or improve site productivity, considering the soil type, climate, and landform”. The Proposed Action would add to other actions that have a negative impact on the attainment of this standard, due to compaction and blending of soils in some locations. Compaction due to construction activities at well pads, along access roads, and in other disturbed areas would result in a small increase in surface runoff from the area. This slightly increased runoff could in turn cause increased sheet, rill, and gully erosion. The construction and operation of each well would incrementally increase the chance that leaks or spills of saline water, hydro-fracturing chemicals, fuels, and lubricants would occur within the CIAA. Spills of this nature could increase the loss of soil productivity within the area.

Mitigation measures and design features appropriately applied from the Proposed Action and Alternative B, Proposed Action with Additional Protection Measures, to reasonably foreseeable development would have the potential to reduce the cumulative impacts to soil resources by minimizing disturbance and preventing spills. Alternative B, the No Action Alternative, would not appreciably add to the cumulative impacts to soil resources.

4.3.5.15 Recreation

The Project Area contains numerous existing roads and oil and gas facilities, which has reduced the value of the Project Area for recreationists seeking pristine landscapes. Recreation activities
on public lands in the winter months generally include hunting of mule deer, pronghorn, and elk. Throughout the remainder of the year, recreational use can be classified best as dispersed and is generally quite low, or centered around features of interest (such as the White River). The impacts from the Proposed Action and Alternative B, Proposed Action with Additional Protection Measures, as well as Alternative B, the No Action Alternative, would not appreciably add to the cumulative impacts to recreational activities in the surrounding area. Reasonably foreseeable projects that could impact recreational resources in the area include Enduring Resource’s West Bonanza EA, EOG’s Chapita Wells-Stagecoach Area EIS, the RDG EIS, and Enduring Resource’s Rock House EA. Cumulative impacts from the implementation of mineral resource development decisions could result in a slight reduction in recreational use of the area.

4.3.5.16 Mineral Resources/Energy Production

Continued intense development of oil and gas in the Uinta Basin will cause increasing conflict with other authorized mineral actions, e.g., mineral materials, solid minerals extraction, tar sands and oil shale production. This situation will need continual coordination with the authorized minerals users to forestall competing and/or conflicting development in the same areas. For the Bonanza development project, no mining claims would be involved; however, such is not the case in other areas of the Basin. At this time there is no effective mitigation, other than coordination, to recognize the authorities of these users.

4.3.5.17 Visual Resources

The topography in the Project Area is rugged and consists of deep canyons, high ridges, rugged cliffs, and plateaus which fall sharply into adjacent creeks. Approximately 80 percent of the lands in the Project Area fall within VRM Class IV (i.e., the level of change to the landscape in Class IV areas can be high). The remaining 20 percent of the lands in the Project Area are classified as VRM Class II (i.e., existing character of the landscape should be retained). Although alterations in the landscape of VRM Class IV areas are within management objectives, an increase in landscape alterations, including changes in form, line, and color, will incrementally add to the developed nature of the Project Area. Reasonably foreseeable projects that could impact the visual characteristic of the project area and surrounding landscape include Enduring Resource’s West Bonanza EA, EOG Chapita Wells – Stagecoach Area EIS, the RDG EIS, and Enduring Resource’s Rock House EA. Cumulative impacts from the implementation of mineral resource development decisions would result in further alterations of the visual landscape, again adding incrementally to the developed nature of the Project Area and surrounding landscape.

4.3.5.18 Paleontology

Increased human activity in the cumulative impact area could cumulatively contribute to indirect impacts on fossil resources (e.g., accidental destruction of fossils or increases in theft or vandalism). Any such negative impact on paleontological resources from the Proposed Action and no action alternatives, however insignificant, would incrementally and cumulatively add to natural and human-induced paleontological resource losses. Adverse impacts to paleontological resources from implementation of Alternative C, the Proposed Action with additional protection measures, would be greatly reduced Alternative C would require the additional protection measure to conduct on-site paleontological surveys to identify sites with fossils, monitoring excavations in highly sensitive areas and ceasing construction operation until an alternate protection strategy can be put in place under. The Proposed Action and the No Action Alternative would preclude such protection actions, thus increasing the probability of damaging important fossil resources in the area. Alternatively, the increased activity may lead to the
discovery of significant fossil resources. If the mitigation procedures are followed, then these discoveries could result in increased scientific knowledge of the area.

4.3.5.19 Socioeconomics

The economy of Uintah County is largely driven by the oil and gas industry. It is anticipated that the pace and level of natural gas development in Uintah County will continue for the foreseeable future. Beneficial and adverse cumulative impacts on social and economic resources would include changes in demographics, employment, wages, local economy, and community services.

Overall, the proposed project would have a beneficial cumulative socioeconomic impact to the CIAA (i.e., Uintah County and the State of Utah). Implementation of the Proposed Action or No Action alternative would create additional high income employment opportunity within Uintah County and the State. In addition, federal lease money and State levied taxes are an important revenue source for the County Special Service Districts and various State Departments. Adverse cumulative impacts that could be caused by the current growth of the oil and gas industry in Uintah County included a shortage of community services (e.g. housing, law enforcement, fire protection, medical and social services, and public schools). Economic dependency on the oil and gas industry in rural Counties also carries a potential for long-term economic crash.

4.3.5.20 Wilderness Characteristics

Reasonably foreseeable projects that could impact the White River wilderness characteristics area include the RDG EIS, and Enduring Resource’s Rock House EA. Cumulative impacts from the implementation of mineral resource development decisions could result in adverse impacts to wilderness characteristics (draft Vernal RMP p. 4.353) similar to those described in Section 4.2.20. As with ACEC and NWSR concerns, the Proposed Action for the Bonanza Project Area would avoid development in the White River corridor. Thus the Proposed Action and Alternative C, the Proposed Action with Additional Protection Measures, would minimize impacts. Implementation of Alternative B, the No Action Alternative, would further reduce the cumulative impacts, as development would be limited to one well on State lands which adjoin, but is outside of the White River corridor.
5.0 CONSULTATION AND COORDINATION

The Council on Environmental Quality (CEQ) regulations under NEPA require an “early and open process for determining the scope of issues to be addressed and for identifying significant issues related to a Proposed Action” (40 CFR 1501.7). In order to satisfy this CEQ requirement, the BLM posted the project to the Environmental Notification Bulletin Board on September 8, 2006. In addition, a 15-day public comment period will be held from October 30 to November 13, 2006.

5.1 INTRODUCTION

The persons and agencies, consulted for this EA are listed in Table 5-1. The list of BLM and non-BLM preparers is provided in Table 5-2.

<table>
<thead>
<tr>
<th>Name</th>
<th>Purpose &amp; Authorities for Consultation or Coordination</th>
<th>Findings &amp; Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bekee Megown</td>
<td>Information on Consultation, under Section 7 of the Endangered Species Act (16 USC 1531)</td>
<td>Provided information on fish and wildlife and Threatened/Endangered species. Also provided comments under NEPA, MBTA, Bald and Golden Eagle Protection Act and the Fish &amp; Wildlife Coordination Act.</td>
</tr>
<tr>
<td>Tom Orth</td>
<td>Consult with Utah DEQ, DAQ as agency with expertise on air quality.</td>
<td>Data on air quality in the State of Utah incorporated into Chapters 3 and 4</td>
</tr>
<tr>
<td>Darlene Burns</td>
<td>Consult with County Road Department as agency with expertise on roads within the Project Area.</td>
<td>Data on County Roads incorporated into Chapters 2, 3, and 4</td>
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</tbody>
</table>

Consultation has been conducted and completed with the U.S. Fish and Wildlife Service. An Environmental Assessment/Biological Assessment was sent to their office on January 24, 2007 with a request for concurrence regarding the impacts associated with the Bonanza project. In the response dated January 30, 2007, the USFWS concurred with the may affect not likely to adversely affect determinations for Uinta Basin hookless cactus, Ute ladies’-tresses, bald eagle, Mexican spotted owl, and yellow-billed cuckoo. In addition, they concurred that the proposed project, including mitigation measures, would not jeopardize the establishment of ferrets in the release area. Due primarily to water depletions, a determination of may affect, likely to adversely affect, the four Colorado River endangered fish (Colorado pikeminnow, bonytail, humpback chub, and razorback sucker) was made by the BLM. The USFWS’s biological opinion waived the depletion fee for this project, since the average annual water depletion was less than 100 acre-feet. See Appendix F.

Consultation with Utah State Historic Preservation Officer (USHPO) was not conducted due to the programmatic nature of this document and its inherent lack of specificity. Consultation with USHPO will occur on a site-specific basis, as necessary, in association with the review of the Application for Permit to Drill, sundry notice, or Right-of-Way application.
Consultation with the Northwestern Band of the Shoshone, Ute Mountain Ute, Confederated Tribes of the Goshute Reservation, Eastern Shoshone, Hopi, Ute Indian Tribe, Navajo Nation, Zia Pueblo, Laguna Pueblo, and Paiute Indian Tribe of Utah was initiated on September 21, 2006. No response was received, therefore consultation is considered to be closed.

5.2 PREPARERS AND REVIEWERS

This EA was prepared by Buys & Associates, Inc. and reviewed by the BLM Vernal Field Office Staff and regional specialists. The preparers and BLM reviewers are provided in Table 5-2.

<table>
<thead>
<tr>
<th>BLM Reviewers</th>
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<tbody>
<tr>
<td>Name</td>
<td>Title</td>
<td>EA Responsibilities</td>
</tr>
<tr>
<td>Stephanie Howard</td>
<td>Environmental Coordinator</td>
<td>NEPA Compliance, Project Management</td>
</tr>
<tr>
<td>Amy Torres</td>
<td>Wildlife Biologist</td>
<td>Wildlife, T&amp;E Wildlife Species</td>
</tr>
<tr>
<td>Stan Olmstead</td>
<td>Hydrologist</td>
<td>Water Resources/Floodplains</td>
</tr>
<tr>
<td>John Mayers</td>
<td>Geologist</td>
<td>Paleontology / Ground Water</td>
</tr>
<tr>
<td>Blaine Phillips</td>
<td>Archaeologist</td>
<td>Cultural Resources</td>
</tr>
<tr>
<td>Kyle Smith</td>
<td>GIS, Cartographer</td>
<td>GIS, Maps</td>
</tr>
<tr>
<td>Marc Stavropoulos</td>
<td>Rangeland Management Specialist</td>
<td>Rangeland Management</td>
</tr>
<tr>
<td>Dylan Tucker</td>
<td>Natural Resource Specialist</td>
<td>Soils, Livestock Grazing</td>
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<tr>
<td>Charlie Sharp</td>
<td>Natural Resource Specialist</td>
<td>Threatened, Endangered, and Candidate Plant Species and Vegetation</td>
</tr>
<tr>
<td>Kim Bartel</td>
<td>Recreation Planner</td>
<td>Recreation, ACECs, Wild and Scenic Rivers, Visual Resources, Wilderness Characteristics</td>
</tr>
<tr>
<td>Delbert Clark</td>
<td>Range Technician</td>
<td>Invasive Species</td>
</tr>
<tr>
<td>Steve Strong</td>
<td>Natural Resource Specialist</td>
<td>Fires, Woodlands</td>
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<tr>
<td>Peter Sokolosky</td>
<td>Geologist</td>
<td>Geology, Minerals</td>
</tr>
<tr>
<td>Scott Archer</td>
<td>Regional Air Quality Specialist</td>
<td>Air Quality</td>
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<tr>
<td>Craig Nicholls</td>
<td>Regional Air Quality Specialist</td>
<td>Air Quality</td>
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<thead>
<tr>
<th>Buys &amp; Associates Preparers</th>
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<tbody>
<tr>
<td>Name</td>
<td>Title</td>
<td>EA Responsibilities</td>
</tr>
<tr>
<td>Stephanie Stewart</td>
<td>Environmental Scientist Buys &amp; Associates</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Dawn Martin</td>
<td>NEPA Project Manager Buys &amp; Associates</td>
<td>Assistant Project Manager</td>
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<tr>
<td>Jean Sinclear</td>
<td>NEPA Specialist Buys &amp; Associates</td>
<td>Technical Editing</td>
</tr>
<tr>
<td>Jon Torizzo</td>
<td>Air Quality Scientist Buys &amp; Associates</td>
<td>Air Quality</td>
</tr>
<tr>
<td>Colin Mann</td>
<td>Senior Ecologist Buys &amp; Associates</td>
<td>Wildlife, Vegetation, Soils, Rangeland, T&amp;E Species</td>
</tr>
<tr>
<td>Dave Nicholson</td>
<td>Senior Geologist Buys &amp; Associates</td>
<td>Water Resources, Paleontology</td>
</tr>
</tbody>
</table>
### BLM Reviewers

<table>
<thead>
<tr>
<th>Name</th>
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<th>EA Responsibilities</th>
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<tbody>
<tr>
<td>Tanja Butler-Melone</td>
<td>GIS Manager, Environmental Planner</td>
<td>GIS, Cartography, Visual Resources, Recreation</td>
</tr>
<tr>
<td></td>
<td>Buys &amp; Associates</td>
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<tr>
<td>Tyler Ashcroft</td>
<td>Environmental Planner</td>
<td>Transportation, Land Use, Socioeconomics</td>
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<td></td>
<td>Buys &amp; Associates</td>
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<tr>
<td>Angela Whitfield</td>
<td>Archeologist, Montgomery Archaeological Consultants</td>
<td>Paleontology, Cultural Resources</td>
</tr>
</tbody>
</table>

### 5.3 SUMMARY OF PUBLIC PARTICIPATION

The Proposed Action was reviewed by an Interdisciplinary Team and subsequent issues were identified through internal scoping (refer to Appendix A). In addition, the public was notified of the revised proposed action through the posting of its description on the Environmental Notification Bulletin Board on September 8, 2006. A 15-day comment period was provided to the public, which ran from October 30, 2006 through November 13, 2006.

The BLM received six written comment letters specific to the Bonanza project, and approximately 33,000 form letters or emails referencing development within the White River wilderness inventory area and areas with or likely to have wilderness characteristics. The 33,000 comment letters and emails focused on proposed development within the White River wilderness inventory area. The comment letters and emails also offered recommendations ranging from approval of the project, to preparation of an EIS. Several comments recommended additional or revised analysis of resource issues. None of the comments received provided substantive new information relevant to this project. Responses to relevant comments are included in Table 5.3-1., and appropriate changes to the EA have been made. Any changes that could affect potential impacts have been analyzed in Chapter 4.0 of the EA. None of the edits warranted an additional public review period.
Table 5.3-1. Comment Analysis

<table>
<thead>
<tr>
<th>Topic</th>
<th>Comment</th>
<th>Commenter</th>
<th>Response</th>
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<tbody>
<tr>
<td>ACECs</td>
<td>The Proposed Action and Alternative C violate NEPA by prematurely limiting reasonable alternatives in ongoing planning efforts. Alternative C and BLM's preferred alternative will both allow intensive well development in the portion of the project area that includes a proposed ACEC. Such drilling will cause direct impacts such as increased traffic, increased noise, visual intrusions, degradation or destruction of natural and cultural resources, preclusion of recreational activities, and the like. In short, the proposed activity will lead to a variety of impacts that will effectively foreclose certain future land management options. This is not allowed when the BLM is currently in the midst of a regional planning process. Among the reasonable choices available in the Vernal RMP process are management decisions that would lead to increased restrictions on portions of the project area (such as management of certain parcels as ACECs or areas where no impairment of wilderness characteristics is allowed). Because these management decisions may not be compatible with intensive gas development a decision on the Kerr-McGee proposal should wait until after the Vernal RMP process is completed.</td>
<td>SUWA</td>
<td>The 1985 Book Cliffs RMP did not designate any ACECs. The Vernal RMP, currently in draft form, considers designation of the White River area as an ACEC. Under FLPMA, the valid existing rights and obligations conferred under these leases are not pre-empted, or otherwise excused, by BLM’s consideration of potential future ACEC designations for portions of the leased areas. Even assuming that the ACEC is adopted in the Record of Decision for the final Vernal RMP, the proponent would not be precluded from developing its existing leases. Pursuant to the express language of the FLPMA, ACEC designations by themselves do not change the allowed uses of public lands. Until a decision is rendered on a new RMP, management of the land will be in accordance with the existing resource management guidance, the Book Cliffs RMP (1984) and it’s ROD (1985). However, alternatives in the Draft RMP cannot, and will not, be precluded by this proposal. The resource values for the ACEC that contribute to the rationale to nominate the White River corridor as an ACEC, including visual resources (4.2.17), cultural resources (4.2.3), and riparian habitat (4.2.9) have been identified and the potential impacts from the Proposed Action and the Additional Mitigation Measures Alternative were assessed. Mitigation measures were identified, as appropriate, to minimize or eliminate impacts to those values (4.2.21). The unique geologic features value (listed in Appendix G of the Draft Vernal RMP) is known as Goblin City, is on the opposite side of the river from this project, is not impacted by this project, and is not addressed in this EA. As such, this EA adequately identifies and assesses potential impacts to values associated with the potential White River ACEC.</td>
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<td><strong>ACECs</strong></td>
<td>BLM failed to take a &quot;hard look&quot; at the potential impacts of the Proposed Action in the following areas: ACEC, erroneously concluding that impacts from the proposed project would be minimal on the resource values of the ACECS. The White River ACEC relevant values include, &quot;high value scenery.&quot; These make the area fragile, sensitive, rare, irreplaceable, exemplary and unique. Yet both Alternative A and C would have serious adverse impacts on the visual resources of the area.</td>
<td>SUWA</td>
<td>See the response to the above comment. In addition, all proposed activities (except for 1 well) under all alternatives will be located either on state land, which is not managed for visual resources, or on BLM land classified as Visual Resource Management Category IV. This category allows for changes to the landscape to dominate the view of the casual observer, therefore the activities would be in conformance with management strategies for the area. The VRM II area was designated as such to protect the viewsesh from the White River. The 1 well located in VRM II (1023-12A) would have minimal impact on the visual resource values of the White River because gold book guidelines, including guidelines in the placement and design of well pads and linear structures, would be applied to mitigate or eliminate visibility of that well from the river.</td>
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<tr>
<td><strong>Air</strong></td>
<td>Approval orders from the Executive Secretary of Air Quality Board will be required.</td>
<td>Utah DEQ/Air Quality</td>
<td>The applicant is required to abide by all appropriate State regulations. However, please note that the project is within the restored boundary of the Uintah and Ouray Indian Reservation, and therefore air quality permitting falls under the jurisdiction of the EPA.</td>
</tr>
<tr>
<td>Air</td>
<td>The project is subject to R307-205-5, Fugitive Dust, steps need to be taken to reduce fugitive dust.</td>
<td>Utah DEQ/Air Quality</td>
<td>The applicant is required to abide by all appropriate State regulations. As outlined in Section 2.2.1.1.2, Kerr-McGee would apply water to project-related roads to reduce fugitive dust from vehicle traffic, as necessary.</td>
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<tr>
<td>Air</td>
<td>Air quality analysis is incomplete because it does not fully assess the cumulative air quality impacts of the Proposed Action along with other existing and proposed sources in the region.</td>
<td>Megan Williams</td>
<td>The cumulative air quality analysis tiers directly to the Vernal Field Office Air Quality Assessment Report, Vernal and Glenwood Springs Resource Management Plans, August 2004. As stated on page 21, “The development alternatives were based on BLM’s proposed plans for resource development, which included estimates for the number of wells drilled for oil and gas, compressor stations, and pipelines, along with other foreseeable development activities by non-BLM entities. Each development alternative covered development activity for an extended period of time, 15 years for the Vernal Management Area (VMA) and 20 years for Glenwood Springs Management Area (GMA). This modeling analysis predicted, at most, annual average air quality impacts, as well as short-term impacts. Therefore, modeling was based on a single year of activity; there would be little or no variation in activity levels from year to year according to BLM field office personnel.” Accordingly, this complex analysis evaluated maximum air quality impacts for the next 15 years. The cumulative impacts resulting from the Bonanza development in conjunction with other regional activities has been fully addressed and is described in detail in the Vernal Field Office Air Quality Assessment Report.</td>
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<tr>
<td>Air</td>
<td>The BLM must complete an air quality dispersion modeling analysis to assess the cumulative impacts of Kerr McGee's process along with other air pollution sources in the area.</td>
<td>Megan Williams</td>
<td>The cumulative air quality analysis tiers directly to the Vernal Field Office Air Quality Assessment Report, Vernal and Glenwood Springs Resource Management Plans, August 2004. As stated on page 21, &quot;The development alternatives were based on BLM's proposed plans for resource development, which included estimates for the number of wells drilled for oil and gas, compressor stations, and pipelines, along with other foreseeable development activities by non-BLM entities. Each development alternative covered development activity for an extended period of time, 15 years for the Vernal Management Area (VMA) and 20 years for Glenwood Springs Management Area (GMA). This modeling analysis predicted, at most, annual average air quality impacts, as well as short-term impacts. Therefore, modeling was based on a single year of activity; there would be little or no variation in activity levels from year to year according to BLM field office personnel.&quot; Accordingly, this complex analysis evaluated maximum air quality impacts for the next 15 years. The extensive modeling that was performed under the Vernal Field Office Air Quality Assessment has fully addressed the cumulative impacts resulting from the Bonanza Development in conjunction with other regional activities and is described in detail in the Vernal Field Office Air Quality Assessment Report. This study therefore fulfills the need for a far-field, cumulative air quality assessment and a similar analysis would be beyond the scope of the Bonanza EA.</td>
</tr>
<tr>
<td>Air</td>
<td>BLM must consider the total nitrogen and sulfur deposition impacts at the Flat Tops Wilderness Area and other impacts to Class I and sensitive areas in this EA. Class I areas are listed in letter 6.</td>
<td>Megan Williams</td>
<td>The comment that &quot;Flat Tops Wilderness Area will be impacted by the Kerr McGee project (Bonanza EA at 4-51)&quot; is inferred by the commenter and is not stated in this section of the EA. Given the distance of Flat Tops from the Project Area (&gt; 100 miles) and the relatively minor emissions of the Project in comparison to regional emissions (see Table 3-3), the Project is not expected to directly impact the air quality of Flat Tops, or other sensitive Class I and II areas. Therefore, a Far Field quantitative analysis is not warranted.</td>
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<td>Air</td>
<td>BLM’s near-field modeling analysis shows significant PM10 impacts.</td>
<td>Megan Williams</td>
<td>The method by which the reader derives the impacts of &quot;212 ug/m3&quot; is flawed. While it is true that construction, drilling, or completion activities could occur simultaneously within the project area, these activities would never occur simultaneously at the same location. Therefore, maximum concentration estimates for each individual activity, at different receptors, are not additive and do not give a total concentration of 212 ug/m3. Therefore, a violation of the NAAQS is not predicted for any pollutant.</td>
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<tr>
<td>Air</td>
<td>BLM did not adequately characterize emissions from the proposed Kerr McGee project and therefore under-predicted the Air Quality Impacts from the proposed project.</td>
<td>Megan Williams</td>
<td>Air quality impacts, including emissions, have been properly analyzed and characterized under the scope of this EA and all potential short-term and long-term impacts have been identified and demonstrated to be less than all relevant significance thresholds. Emissions are quantified and summarized in Table 3-3, and impacts are evaluated and compared to applicable thresholds in Section 4.2.1 of this document. A copy of the emissions inventory developed for the Proposed Action along with detailed emission calculations is available through the Vernal Field Office.</td>
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<tr>
<td>Air</td>
<td>BLM must assess the air quality impacts of PM2.5 emissions from the Kerr McGee project.</td>
<td>Megan Williams</td>
<td>Section 4.2.1.1 has been modified to include results of PM2.5 modeling. As discussed in that section, maximum hourly emissions of PM2.5 were estimated and used for comparison to applicable short-term and annual ambient air quality standards. Comparison to annual standards was provided for consistency. However, the annual impacts are conservative in that they assume annual emissions allocated to the same locations for the entire development period, which is not the case. The annual PM2.5 results demonstrate that even if the proposed annual pace of development occurred in the same location during a single year, the effects would still be less than all ambient air quality standards.</td>
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<tr>
<td>Air</td>
<td>BLM assumed controls for fugitive dust emissions that are not identified as mitigation measures and made enforceable.</td>
<td>Megan Williams</td>
<td>BLM assumes that the commenter is referring to the 50% watering control efficiency assumption discussed in Section 3.2.3. Section 2.2.11.2 of the EA includes a commitment by Kerr-McGee which says “as needed or determined necessary by the SMA AO, Kerr-McGee would apply water to project-related roads to reduce fugitive dust from vehicle traffic.” This commitment is a component of the proponent’s Proposed Action, and thus, will be implemented. Thus, the 50% watering control efficiency assumption during pad and road construction is a valid assumption for fugitive dust emission estimates. The dust reduction factor applied for precipitation events is a valid</td>
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<tr>
<td>Air</td>
<td>BLM must assess the increased emissions associated with the electricity needs for the electric compressors.</td>
<td>Megan Williams</td>
<td>The Bonanza power plant is expected to handle the additional power needs of the Bonanza EA under the current permitted levels of emissions.</td>
</tr>
<tr>
<td>Air</td>
<td>BLM did not include adequate information in the EA for the public to assess the modeling inventory.</td>
<td>Megan Williams</td>
<td>It is not clear specifically what information the reader is requesting for review. However, the full emissions inventory, along with detailed emission calculations, is available at the Vernal Field Office in Vernal, UT for public review as part of the project record.</td>
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<tr>
<td>Air</td>
<td>It appears that annual average emission rates were modeled regardless of the averaging time of the air standard in question.</td>
<td>Megan Williams</td>
<td>The maximum short-term hourly emission rates were applied to determine maximum short-term impacts, while annual emission rates were used to predict maximum annual average impacts only.</td>
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<tr>
<td>Air</td>
<td>BLM's near-field modeling must consider the maximum concentration that occurs in the ambient air.</td>
<td>Megan Williams</td>
<td>Receptor grids for dispersion modeling were placed throughout the project area so as to determine the maximum impact from each activity in the ambient air. There were no public access areas excluded from the receptor modeling grids. Receptor spacing was set in accordance with Utah Division of Air Quality modeling requirements, where appropriate, and included all public areas located within the project area. Therefore, the near-field modeling does evaluate the maximum concentration that occurs in ambient air, in contrary to what is suggested in the comment.</td>
</tr>
<tr>
<td>Air</td>
<td>BLM failed to include an analysis of the impacts of ground level ozone concentrations.</td>
<td>Megan Williams</td>
<td>Comment noted, however, BLM's regional air quality specialists were contacted regarding this specific comment and they maintain that an analysis of ground level ozone impacts is beyond the scope of this project.</td>
</tr>
<tr>
<td>Air</td>
<td>The applicant should consult with USFWS Environmental Contaminants branch about using magnesium-chloride for dust suppression.</td>
<td>USFWS, Utah Field Office</td>
<td>Comment and suggestion noted and appreciated.</td>
</tr>
<tr>
<td>Air Quality</td>
<td>The failure to properly analyze air quality effects prevents an accurate evaluation of long-term impacts.</td>
<td>SUWA</td>
<td>Air quality impacts have been properly analyzed and characterized under the scope of this EA. All potential short-term and long-term impacts have been identified and demonstrated to be less than all relevant significance thresholds.</td>
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### 5.0 - Consultation and Coordination

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<tr>
<td>Air Quality</td>
<td>The BLM’s evaluation of cumulative impacts to air quality understates the true effect that this project will have in that area.</td>
<td>SUWA</td>
<td>Cumulative air quality impacts have been properly analyzed and characterized under the scope of this EA in Section 4.3.3.1.</td>
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<tr>
<td>Cultural and Native American Resources</td>
<td>The EA fails to show that consultation with SHPO and Native American Tribes has occurred.</td>
<td></td>
<td>As discussed in Section 5.1 for this project, consultation with Utah State Historic Preservation Officer and the thirteen (13) federally-recognized Native American Tribes having traditional ties to the Uinta Basin will occur on a site-specific basis, as necessary, in association with the review of the site-specific Application for Permit to Drill, sundry notice, or Right-of-Way application.</td>
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<td>Cultural Resources</td>
<td>The EA fails to take a hard look at potential impacts to cultural sites. A) Although it suggests that avoidance activities will minimize potential damage to cultural resources, the BLM has not inventoried the project to determine where sites might exist. B) The EA only briefly mentions long-term impacts to cultural resources; it fails to look at the likelihood of adverse effects (i.e., indirect effects) to cultural resources from greater access to the area. Increased vehicular access and traffic to the area would likely result in augmented rates of vandalism, collection, and other resource damage.</td>
<td>SUWA</td>
<td>Section 3.5 specifies that a Class I inventory that was completed for the project, and discloses the results of that inventory. Due to the programmatic nature of the EA, a Class III inventory will be conducted in association with each site specific application. In addition, section 2.2.11.3 clearly discusses applicant-committed measures designed to avoid impacts to cultural resources under the alternatives. Section 2.2.11.3 has been revised to state that the measures would be committed to under all alternatives, rather than just the Proposed Action and the Additional Mitigation Measures Alternative. As addressed in the analyses in Section 4.2.3, these measures would effectively eliminate direct impacts to known cultural resources and potential surface cultural resources. Potential indirect and cumulative effects on cultural resources are addressed within the analyses in Sections 4.2.3 and 4.3.3.3 respectively. The potential for increased collection or accidental destruction due to increased access has been added into the discussion. However, indirect impacts to cultural resources (e.g., vandalism) are not quantifiable, therefore, the analyses are limited to qualitative discussions on indirect impacts.</td>
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<tr>
<td>Cumulative Impacts</td>
<td>The EA fails to evaluate cumulative impacts of the proposed project and other proposed projects in the area to visual resources. There is no mention made of other projects in the area.</td>
<td>SUWA</td>
<td>Section 4.3.1 of the EA provides quantitative information on cumulative impacts of other past, present and reasonably foreseeable oil and gas development projects in the Vernal Field Office. The level of analysis and scope of cumulative impact assessment within Section 4.3.3.17 is commensurate with the potential impacts. However, a list of other projects adjacent to the project area has been added to that section.</td>
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<tr>
<td>Cumulative Impacts</td>
<td>The EA fails to adequately analyze cumulative impacts; that is to quantify or identify preexisting impacts.</td>
<td>SUWA</td>
<td>Section 4.3.1 of the EA provides quantitative information on cumulative impacts of other past, present and reasonably foreseeable oil and gas development projects in the Vernal Field Office. Sections 4.3.3.1 through 4.3.3.20 subsequently address resource-specific cumulative impacts using the disturbance calculations and information presented in Section 4.3.1, as well as both qualitative and quantitative (as appropriate or available) cumulative impact assessments from other public land uses.</td>
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<td>General</td>
<td>EA failed to fully analyze, evaluate, and consider a directional drilling alternative.</td>
<td>SUWA</td>
<td>As cited in the EA, directional drilling would be used to avoid surface disturbing impacts to sensitive resources such as cultural sites (Section 2.2.11.3), paleontological resources (Section 2.4.5), and occupied T&amp;E species habitats (Section 2.4.2.1). Section 2.5.3 provides BLM's rationale for why a stand-alone directional drilling alternative was not fully analyzed. However, based on this comment, additional language has been added to Section 2.5.3 to further explain some of the technical difficulties with directional drilling in the Bonanza Project Area.</td>
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<tr>
<td>General</td>
<td>The EA fails to provide independent evaluation of information provided by applicant, i.e., a third party consultant (per 40 CFR 1506.5(a)-(b)).</td>
<td>SUWA</td>
<td>The Bonanza EA is a BLM document. Preparation of EAs by third party contractors is a standard and accepted practice. Section 5.2 of the Bonanza EA acknowledges the EA was prepared by a third party but was reviewed and approved by the BLM. Table 5-2 identifies all third party preparers, as well as BLM reviewers/staffers responsible for conducting the independent evaluation of the working EA and ensuring the document complies with NEPA, CEQ regulations and other laws, regulations, policies and procedures.</td>
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<tr>
<td>General</td>
<td>The difference between Alternatives A and C is unclear. They appear to be the same; suggest eliminating Alternative C.</td>
<td>USFWS, Utah Field Office</td>
<td>In this EA, Alternative A consists of the Proposed Action as submitted by the applicant. During the impact analyses of the Proposed Action, numerous mitigation measures (Section 4.2.21.1) were developed in order to partially mitigate environmental impacts. Those mitigation measures from Section 4.2.21.1 were included upfront in Alternative C as additional environmental protection measures, which thereby serve to reduce or eliminate the potential impacts that were disclosed under the Proposed Action.</td>
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<td>General</td>
<td>The EA should incorporate USFWS conservation measures for Uinta Basin hookless cactus in the analysis of effects.</td>
<td>USFWS, Utah Field Office</td>
<td>The Proposed Action analysis in Section 4.2.6.1 has been modified to acknowledge that USFWS conservation measures (outlined as mitigation in Section 4.2.21.1) would effectively reduce or eliminate direct and indirect impacts to the species. The USFWS conservation measures were included as additional protection measures under Alternative C, thus effectively minimizing potential impacts to the species, as stated for this alternative in Section 4.2.6.3. Therefore, Alternatives A and C could result in a “may affect, not likely to adversely” situation for the Uinta Basin hookless cactus. Alternative B would reduce development by 95% from the Proposed Action, thus the development of 5 wells on State land would substantially reduce the anticipated magnitude of impacts from those identified and assessed for the Proposed Action. However, should State lands include habitat for this species, the BLM does not have authority to enforce implementation of USFWS conservation measures on State land. Section 4.2.6.2 has been modified to reflect that the No Action alternative could result in a “may affect, likely to adversely affect” determination for the Uinta Basin hookless cactus.</td>
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<tr>
<td>Grazing</td>
<td>Impact to Robinson's grazing permits must be analyzed in the EA prior to issuing a final EA.</td>
<td>William Robinson</td>
<td>Section 4.2.11 of the EA analyzes the impacts to livestock and livestock management in the project area. A maximum total of 62 AUMs would be disturbed under the Proposed Action, of that, 40 AUMs, or 2 percent of the total AUMs, would be associated with the Seven Sisters allotment. The applicant's commitment (section 2.2.11.6) to ensure continued integrity of existing fences, proper maintenance of cattleguards, as well as the interim and final revegetation would minimize short- and long-term impacts to grazing permittees in the project area. Alternative C's additional protection measures would prohibit roads, pipelines, pads or other facilities within a 660 foot distance of existing livestock facilities such as corrals or watering facilities.</td>
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<td>Grazing</td>
<td>There is no indication that BLM can ensure compliance with reclamation regulations and that grazing will be protected. These issues must be analyzed.</td>
<td>William Robinson</td>
<td>Subsections 2.2.9.1 and 2.2.9.2 contain measures for implementing interim and final reclamation. In addition, 2.2.9.2 states &quot;Kerr-McGee would work with the SMA to monitor the success of interim and final reclamation. Annual inspections on selected sites would be performed starting two years after initial reclamation work.&quot; To ensure reclamation compliance, the operator is required have a bond prior to conducting operations on BLM land. That bond is not released until either the responsibility for that well is assumed by another operator (in the event of a sale), or the well is reclaimed and revegetated in a manner acceptable to the BLM.</td>
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<tr>
<td>Grazing</td>
<td>The EA should establish a method of communication between the project proponent and livestock operators to address AUM losses, and AUM losses should be mitigated or compensated for.</td>
<td>Uintah County</td>
<td>Public notification of proposed projects is accomplished through posting of projects on the Utah BLM Environmental Notification Bulletin Board at <a href="https://www.ut.blm.gov/enbb/index.php">https://www.ut.blm.gov/enbb/index.php</a> and through public comment periods. The NEPA documents prepared for each project analyze the project and disclose the impacts to range resources, including AUMs. Mitigation measures are developed through this process to reduce or eliminate the anticipated impacts.</td>
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<td>Mitigation</td>
<td>BLM has apparently erroneously inserted mitigation measures into the discussion of Alternative A that belong with Alternative C. Compare the EA at 2-20-through 2-24 with id. At 4-42-4-46. This confusion could have led the agency to underestimate the potential impacts from the proposed alternative.</td>
<td>SUWA</td>
<td>In this EA, Alternative A consists of the Proposed Action as submitted by the applicant. During the impact analyses of the Proposed Action, numerous mitigation measures (Section 4.2.21.1) were developed in order to partially mitigate environmental impacts. Those mitigation measures from Section 4.2.21.1 were included upfront in Alternative C as additional environmental protection measures, which thereby serve to reduce or eliminate the potential impacts that were disclosed under the Proposed Action.</td>
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<td>Reclamation</td>
<td>The EA incorrectly assumes that reclamation efforts will reduce the long-term disturbance of the project. However in the North Chapita Natural Gas Well Development Project EA No. UT-080-2003-0307V, &quot;recent BLM monitoring has documented that interim reclamation efforts in oil and gas development areas have largely been unsuccessful at establishing soil stability and vegetation. Accordingly, BLM field inspections are indicating that initial disturbance should be more accurately portrayed as long-term impacts for the life of the project.&quot; Portions of the EA suggest as much, in contradiction to the document's explicit assumptions regarding reclamation.</td>
<td>SUWA</td>
<td>The EA does not assume that reclamation efforts will reduce long-term disturbance. Rather, the Chapter 4 analyses within the EA are conservative in assuming that most of the initial short-term disturbances could remain as long-term disturbances within the project area, which was the approach used in the referenced North Chapita EA. Despite recent observations of unsuccessful reclamation, the operator is required to implement interim reclamation efforts. Section 2.2.10 states that implementation of successful interim reclamation and revegetation practices should effectively reduce the initial, short-term disturbance resulting from the project, thus the long-term disturbance should be substantially less. However, for impact analyses in Chapter 4 of this EA, all surface disturbance and resulting direct and indirect impacts were analyzed using the initial or maximum surface disturbance calculations.</td>
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<td>Recreation</td>
<td>The section on recreation fails to analyze impacts from other reasonably foreseeable projects in the area on this resource value.</td>
<td>SUWA</td>
<td>The level of analysis and scope of cumulative impact assessment within each of the resource areas in this EA is commensurate with the potential impacts. Language has been added to section 4.3.3.15 to clarify incremental impact of reasonably foreseeable development.</td>
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<td>Soils</td>
<td>BLM failed to take a &quot;hard look&quot; at the potential impacts of the Proposed Action on soil resources. 12 of the 13 soil complexes found within the project area &quot;may inhibit successful reclamation&quot; and lists the significant threat of erosion, the EA inexplicably concludes that this would not constitute a significant impact.</td>
<td>SUWA</td>
<td>The EA acknowledges that the soil characteristics involved in the project area have potential for soil erosion and potential for moderate to low successful reclamation. Section 4.2.14.1 also acknowledges that the proposed action involves approximately 6.8 percent of the total project area, which (using conservative calculations) is estimated to increase sediment loads in the White River by about 1.5%. Thus, the impacts to soils and subsequent erosion would be minor. Regardless, both the Proposed Action and Alternative C would incorporate construction and operation actions to minimize disturbance and enhance interim and final reclamation.</td>
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<tr>
<td>Transport</td>
<td>County roads will not be reclaimed unless approved by Uintah County Commission.</td>
<td>Uintah County</td>
<td>The BLM acknowledges the County's authority on County roads. The Transportation Plan has been slightly modified to include this recognition.</td>
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<td><strong>Vegetation</strong></td>
<td>Applicant committed measures for hookless cactus are unclear.</td>
<td>USFWS, Utah Field Office</td>
<td>The Proposed Action does not include applicant-committed measures for the Uinta Basin hookless cactus. Conservation measures, as recommended by the USFWS, were therefore, included as mitigation measures for the Proposed Action in Section 4.2.21.1. The USFWS conservation measures were also carried forward as additional protection measures under Alternative C.</td>
</tr>
<tr>
<td><strong>Visual Resources</strong></td>
<td>BLM failed to take a &quot;hard look&quot; at the potential impacts of the Proposed Action on visual resources. The EA acknowledges that visual impacts &quot;would be considered adverse,&quot; for both the Vernal draft RMP's proposed alternative and Alternative C, if seen from sensitive viewpoints and implies that the modifications to the landscape might not meet the relevant VRM classifications. BLM must further analyze these potential direct and indirect effects rather than relying upon dismissive conjecture.</td>
<td>SUWA</td>
<td>Impacts to visual resources were adequately disclosed in section 4.2.17. This section states that “impacts would be considered adverse if the landscape as seen from sensitive viewpoints is substantially degraded or changed, or if the modification…could not meet the VRMP classification requirements…” However, discussion of the impacts from the various alternatives shows that development within VRM Class IV would meet BLM objectives. Impacts on visual resources resulting from the development of one well within the VRM Class II areas would be effectively mitigated through application of gold book guidelines including guidelines in the placement and design of well pads and linear structures. Language has been added to Section 4.3.3.17 to clarify RFD and cumulative impacts on visual resources.</td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td>Best management practices should be applied to reduce the likelihood of violating water quality standards and minimize impacts to water quality.</td>
<td>Utah DEQ/Water Quality</td>
<td>Comment noted, however, the comment letter did not specify or recommend specific BMPs for consideration. The alternatives include the use of Gold Book standards, which, if implemented properly would serve to minimize impacts to water quality.</td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td>The Division of Water Quality requests to add conditions to the EA (see page 2 of DWQ letter)</td>
<td>Utah DEQ/Water Quality</td>
<td>Comment noted, however, many of the conditions are already addressed in the resource specific section, so the additional concerns are not necessary. In addition, the alternatives of this EA include the use of Gold Book standards, which, if implemented properly would serve to minimize impacts to water quality.</td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td>The White River should be monitored for effectiveness of sediment control and applicable BMPs</td>
<td>Utah DEQ/Water Quality</td>
<td>BLM is not aware of information, either scientific or anecdotal, that would indicate the need for such monitoring.</td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td>Storm Water General Permit and the General Permit for Construction Dewatering would be required.</td>
<td>Utah DEQ/Water Quality</td>
<td>The applicant is required to abide by all appropriate State regulations.</td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td>The Utah Division of Water Quality requires the submission of plan elements for permanent storm water runoff control and treatment</td>
<td>Utah DEQ/Water Quality</td>
<td>The applicant is required to abide by all appropriate State regulations.</td>
</tr>
<tr>
<td>Topic</td>
<td>Comment</td>
<td>Commenter</td>
<td>Response</td>
</tr>
<tr>
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</tr>
<tr>
<td>Wilderness</td>
<td>“Wilderness characteristic” terminology should be changed to be consistent with wording in the 2003 Wilderness Re-inventory Settlement Agreement. BLM is without authority to create a new land categorization or to manage for wilderness characteristics on non-WSA lands.</td>
<td>Uintah County</td>
<td>Identification of impacts to wilderness characteristics is strictly administrative, with no recommendations regarding designations of wilderness areas or the creation of new wilderness study areas to be made. However, the terminology has been changed.</td>
</tr>
<tr>
<td>Wilderness</td>
<td>The process for identifying wilderness characteristics in the subject area is faulty or non-existent. Neither the current RMP nor the proposed revised RMP specify whether, and how, such wilderness characteristics were identified and analyzed. The subject draft EA appears to be a bare assertion of the existence of wilderness characteristics, and has no basis in any valid FLPMA section 201 inventory process.</td>
<td>Uintah County</td>
<td>This comment is noted but is beyond the scope of this document because this EA discloses impacts to the environment that would result from the implementation of the proposed project.</td>
</tr>
<tr>
<td>Wilderness</td>
<td>The Secretary of the Interior promised and agreed at page 14 paragraph 7 of the April, 2003 Settlement Agreement between Utah and DOI/BLM, that BLM will &quot;not establish, manage or otherwise treat public lands, other than FLPMA Section 1782 WSAs and Congressionally designated wilderness, as WSAs or as wilderness pursuant to the Section 202 process absent Congressional Authorization.&quot; The Secretary promised and agreed at page 13 paragraph 4 of the Settlement Agreement not to &quot;manage [non-WSA] lands as if they are or may become WSAs.&quot; Nothing in the Settlement Agreement or FLPMA provides for actual use of so-called wilderness characteristics inventory data or any other public input received on such, to justify &quot;managing for wilderness characteristics&quot; on non-WSA BLM ground or analyzing impacts to such in NEPA documents such as the subject EA.</td>
<td>Uintah County</td>
<td>The decision on this EA would not render a new wilderness or wilderness study area designation. Although Congress ended BLM’s authority to designate WSAs in 1993, BLM retains its Section 201 FLPMA authority to inventory resources or other values, including areas with wilderness characteristics such as naturalness, or those that offer solitude and are conducive to primitive, unconfined recreation. Through its land use planning process, BLM will consider all available information to determine the mix of resource use and protection that best serves the FLPMA multiple use mandate. New information may be considered in the NEPA process as appropriate. In accordance with NEPA and CEQ regulations, this EA discloses the impacts associated with the PA and alternatives.</td>
</tr>
<tr>
<td>Topic</td>
<td>Comment</td>
<td>Commenter</td>
<td>Response</td>
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</tr>
<tr>
<td>Wilderness</td>
<td>Wilderness characteristics management violates the multiple use sustained yield mandate of FLPMA, NFMA, and the 2003 Re-inventory Settlement Agreement between the State of Utah and the DOI.</td>
<td>Uintah County</td>
<td>Identification of lands with wilderness characteristics does not preclude other uses of those lands and, therefore, does not violate the multiple use mandate. In accordance with NEPA and CEQ regulations, this EA discloses the impacts associated with the PA and alternatives.</td>
</tr>
<tr>
<td>Wilderness</td>
<td>BLM failed to take a &quot;hard look&quot; at the potential impacts of the Proposed Action on wilderness character. Impacts to areas of wilderness characters would only amount to 13 acres. However, this completely ignores the indirect effect of gas production on the surrounding naturalness and solitude. The EA underestimates the impacts of the proposed project because it appears to be relying on an incorrect map. In 2001, the agency found 2 additional areas with wilderness characteristics adjacent to the White River WIA. Compare Appendix D map with BLM VFO, Revisions to the 1999 Utah Wilderness Inventory (October 2001)</td>
<td>SUWA</td>
<td>The wilderness characteristics area of analysis has been revised to reflect the addition of areas identified in the Vernal Field Office Revisions to the 1999 Utah Wilderness Inventory (October 2001) as well as the area nominated by the Utah Wilderness Coalition, which was determined by the BLM to have a reasonable probability to contain wilderness characteristics. Impact calculations have also been revised accordingly. Impacts to wilderness characteristics, including those on naturalness and solitude, have been analyzed.</td>
</tr>
<tr>
<td>Wilderness</td>
<td>The proposed drilling would likely have several &quot;significant effects on the human environment.&quot; The potential sacrifice of an area that BLM has identified as possessing wilderness characteristics worthy of protection alone should suffice to constitute a significant impact.</td>
<td>Richard Spotts</td>
<td>The proposed project would result in an approximate disturbance of 65 acres of wilderness characteristics lands. This amounts to approximately 2% of the total wilderness characteristics lands in the project area. It is approximately 0.2% of the entire White River wilderness characteristics area (an approximately 25,000 acre area). Thus, the impacts to wilderness characteristics are minor.</td>
</tr>
<tr>
<td>Wildlife</td>
<td>The EA should analyze the potential for breeding bald eagles to occur in the project area.</td>
<td>USFWS, Utah Field Office</td>
<td>Bald eagle discussions have been modified to address that nesting sites could potentially occur in the area, and therefore, could potentially be affected by project activities if mitigation measures are not implemented.</td>
</tr>
<tr>
<td>Wildlife</td>
<td>Water depletion, and its effect on the Colorado River endangered fish species, is discussed in Section 4.2.7. Impacts to critical habitat from water depletions should be discussed. Effects from water depletion should lead to &quot;may</td>
<td>USFWS, Utah Field Office</td>
<td>Wording has been added to address the impacts to critical habitat from the proposed activity. In addition, the determination for the Colorado River Endangered Fish species has been revised to may affect, likely to adversely affect for all three alternatives.</td>
</tr>
</tbody>
</table>
### 5.0 - Consultation and Coordination

<table>
<thead>
<tr>
<th>Topic</th>
<th>Comment</th>
<th>Commenter</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>affect, likely to adversely effect&quot; determination.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wildlife</td>
<td>The EA should incorporate measures identified by USFWS letter to minimize adverse affect to bald eagles.</td>
<td>USFWS, Utah Field Office</td>
<td>As discussed in Section 4.2.7, no development is proposed in the White River corridor, thus there would be no impacts to bald eagles choosing to nest or roost in mature cottonwood trees along the river. However, the mitigation measures have been added to those already outlined in Section 4.2.21.1, and the environmental protection measures under Alternative C.</td>
</tr>
<tr>
<td>Wildlife</td>
<td>Re-consider dismissing black-footed ferrets.</td>
<td>USFWS, Utah Field Office</td>
<td>Analysis for the black-footed ferrets has been carried forward into chapter 4.</td>
</tr>
<tr>
<td>Wildlife</td>
<td>The correct determination for the Mexican spotted owl is &quot;may affect, not likely to affect&quot;.</td>
<td>USFWS, Utah Field Office</td>
<td>The determinations for the Mexican spotted owl have been revised to may affect, not likely to adversely affect for all three alternatives.</td>
</tr>
</tbody>
</table>
6.0 REFERENCES

American Conference of Governmental Industrial Hygienists (ACGIH), 2003. Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices.


Environmental Assessment Technical Report Volume # 1. Prepared for the Vernal, Utah, BLM District Office and Coastal Oil and Gas Corporation, Enron Oil and Gas Company, and Uintah and Ouray Tribes.


Uintah County Special Service District. 2006. Information provided by Cheri McCurdy (Uintah County) to Tyler Ashcroft (Buys and Associates). March 2006.


Utah Department of Environmental Quality - Division of Air Quality. 1998. Electronic files consisting of four years of meteorological data measured at the Deseret Power Plant near Bonanza, Utah.


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APPENDIX A
BLM IDT CHECKLIST
**INTERDISCIPLINARY TEAM ANALYSIS RECORD CHECKLIST**

**Project Title**: Kerr-McGee’s Bonanza Field Development EA

**NEPA Log Number**: UT-080-2006-240

**File/Serial Number**: 

**Project Leader**: Stephanie Howard

**DETERMINATION OF STAFF**: (Choose one of the following abbreviated options for the left column)

- **NP** = not present in the area impacted by the proposed or alternative actions
- **NI** = present, but not affected to a degree that detailed analysis is required
- **PI** = present with potential for significant impact analyzed in detail in the EA; or identified in a DNA as requiring further analysis
- **NC** = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section C of the DNA form.

<table>
<thead>
<tr>
<th>Determination</th>
<th>Resource</th>
<th>Rationale for Determination*</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI</td>
<td>Air Quality</td>
<td>Proposed compressors would potentially impact air quality. Also fugitive dust.</td>
<td>Stephanie Howard</td>
<td>9/18/06</td>
</tr>
<tr>
<td>PI</td>
<td>Areas of Critical Environmental Concern</td>
<td>Nominated White River with spectacular vistas. NSO line-of-site from centerline of river up to one-half mile away.</td>
<td>Kim A Bartel</td>
<td>3-17-06</td>
</tr>
<tr>
<td>PI</td>
<td>Cultural Resources</td>
<td>Moderate to high potential for site locations.</td>
<td>Blaine Phillips</td>
<td>9/18/06</td>
</tr>
<tr>
<td>NI</td>
<td>Environmental Justice</td>
<td>According to the EPA Region VIII, State of Utah, Environmental Justice Map, the region has been categorized as a minority population area of 10-20% and a poverty population area of 10-20%. No minority or economically disadvantaged communities or populations are present which could be affected by the Proposed Action or alternatives. (<a href="http://www.epa.gov/enviro/ej">http://www.epa.gov/enviro/ej</a>, 8/25/05)</td>
<td>Stephanie Howard</td>
<td>9/18/06</td>
</tr>
<tr>
<td>NP</td>
<td>Farmlands (Prime or Unique)</td>
<td>No prime or unique farmlands are present per the Book Cliffs RMP.</td>
<td>Stephanie Howard</td>
<td>9/18/06</td>
</tr>
<tr>
<td>PI</td>
<td>Floodplains</td>
<td>Proximity to White River floodplain.</td>
<td>Stan Olmstead</td>
<td>9/18/06</td>
</tr>
<tr>
<td>PI</td>
<td>Invasive, Non-native Species</td>
<td>Potential for invasive and annual weeds to occur or increase in density.</td>
<td>Delbert Clark</td>
<td>9/18/06</td>
</tr>
<tr>
<td>NI</td>
<td>Native American Religious Concerns</td>
<td>No known locations.</td>
<td>Blaine Phillips</td>
<td>9/18/06</td>
</tr>
<tr>
<td>PI</td>
<td>Threatened, Endangered or Candidate Plant Species</td>
<td>Potential habitat for <em>Sclerocactus glaucus</em> and <em>Spiranthes diluvialis</em> based on a review of geology, elevation, soils, vegetation, and species distribution; there are no known occurrences of either species within Project Area although an isolated SCGL population occurs ~2 miles from site; surveys required in all areas containing suitable habitat for these species prior to construction or related activities</td>
<td>Charlie Sharp</td>
<td>03/09/06</td>
</tr>
<tr>
<td>PI</td>
<td>Threatened, Endangered or Candidate Animal Species</td>
<td>T&amp;E fish, bald eagle</td>
<td>Amy Torres</td>
<td>9/18/06</td>
</tr>
<tr>
<td>Determination</td>
<td>Resource</td>
<td>Rationale for Determination*</td>
<td>Signature</td>
<td>Date</td>
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</tbody>
</table>
| NI           | Wastes (hazardous or solid)      | *Hazardous Waste*: No chemicals subject to reporting under SARA Title III in an amount equal to or greater than 10,000 pounds will be used, produced, stored, transported, or disposed of annually in association with the drilling, testing, or completing of this well. Furthermore, no extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, will be used, produced, stored, transported, or disposed of in association with the drilling, testing, or completing of this well*
|               |                                  | *Solid Wastes*: Trash would be confined in a covered container and hauled to an approved landfill. Burning of waste or oil would not be done. Human waste would be contained and be disposed of at an approved sewage treatment facility. | Stephanie Howard | 9/18/06    |
| Surface: PI  | Ground: PI                       | *Surface*: Increased erosion due to roads, which is discussed through the soils section. Potential for spills of hydrocarbons and other chemicals as well as increased sediments in the river which will be considered through the Section 7 Consultation.
| Ground: PI   | Water Quality (drinking/ground)  | *Ground*: The operator has certified compliance with all Onshore Oil and Gas Orders. “Onshore Oil and Gas Order No. 2 Drilling Operations” will assure that the project will not adversely affect groundwater quality. Due to the State-of-the-art drilling and well completion techniques, the possibility of adverse degradation of groundwater quality or prospectively valuable mineral deposits by the Proposed Action will be negligible.
|              |                                  | Well completion must be accomplished in compliance with “Onshore Oil and Gas Order No. 2, Drilling Operations”. These guidelines specify the following:….proposed casing and cementing programs shall be conducted as approved to protect and/or isolate all usable water zones, potentially productive zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use.
|              |                                  | Potential to impact through leaks or spills.                                                | Stan Olmstead    | 9/18/06    |
| PI           | Wetlands/Riparian Zones          | Proximity to White river riparian zones.                                                    | Stan Olmstead    | 9/18/06    |
| PI           | Wild and Scenic Rivers           | White River, identified as suitable for tentative wild classification. Potential for wells and infrastructure to be visible. | Kim A Bartel     | 3-17-06    |
| NP           | Wilderness                        | No wilderness areas or WSAs are present.                                                     | Kim A Bartel     | 3-17-06    |

**OTHER RESOURCES / CONCERNS**

<p>| PI           | Rangeland Health Standards and Guidelines | Could cause the allotment to not meet Utah Rangeland Health standards #3 (due to increased invasive species due to disturbance which decreases the desired species) | Dylan Tucker     | 9/18/06    |
| PI           | Livestock Grazing                    | Construction… Cattleguard maintenance, increased traffic impacts, increased trespass of cattle on sheep allotments due to disturbance which decreases the desired species | Dylan Tucker     | 9/18/06    |</p>
<table>
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<tr>
<th>Determination</th>
<th>Resource</th>
<th>Rationale for Determination*</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP</td>
<td>Woodland / Forestry</td>
<td>No woodlands present.</td>
<td>Steve Strong</td>
<td>3-13-06</td>
</tr>
<tr>
<td>PI</td>
<td>Vegetation including Special Status Plant Species other than FWS candidate or listed species</td>
<td>Disturbance and removal of native vegetation (salt desert shrub, sagebrush)</td>
<td>Charlie Sharp</td>
<td>03/09/06</td>
</tr>
<tr>
<td>NP</td>
<td>Fish and Wildlife Including Special Status Species other than FWS candidate or listed species eg. Migratory birds</td>
<td>Golden eagle, ferruginous hawk, burrowing owl habitat</td>
<td>Amy Torres</td>
<td>9/18/06</td>
</tr>
<tr>
<td>PI</td>
<td>Soils</td>
<td>Increased sediment and salinity to white river. Comply with Colorado River Basin Salinity Control Act of 1974.</td>
<td>Dylan Tucker</td>
<td>9/18/06</td>
</tr>
<tr>
<td>PI</td>
<td>Recreation</td>
<td>River rafting camping at Atchees Wash camp site and hiking to the Goblin City Overlook located atop the ridge between Atchees and Saddletree Draws.</td>
<td>Kim A Bartel</td>
<td>3-17-06</td>
</tr>
<tr>
<td>PI</td>
<td>Visual Resources</td>
<td>VRM II along the river corridor with the ridgeline as the delineator between higher and lower (II and IV) classes.</td>
<td>Kim A Bartel</td>
<td>3-17-06</td>
</tr>
<tr>
<td>NI</td>
<td>Geology / Mineral Resources/Energy Production</td>
<td>Geology - Outcroppings of the sandstones, mudstones and siltstones of the lower Uinta Formation outcrop within the Project Area (proponent can refer to USGS Maps MF-1163 and Map I-736 that show the geology of the Vernal and Grand Junction 1 degree x 2 degree quads; as well as USGS Maps I-1204 and 1289 that show the surficial geology of the Vernal and Grand Junction quads). Mineral Resources - There are no pending applications or active non-oil and gas (i.e., solid leasable or mineral materials) related mineral authorizations within the Project Area (though the proponent’s consultant should conduct a geographic search via <a href="http://www.blm.gov/lr2000">www.blm.gov/lr2000</a> to affirm this). Energy Development - A Statement of adverse energy impact (in accordance with EO 13212) is not needed as the project is directed at oil and gas development (however, the proponent should review this Executive Order 13212; a website with it is available at <a href="http://ceq.eh.doe.gov/nepa/regs/eos/">http://ceq.eh.doe.gov/nepa/regs/eos/</a> eo13212.html)</td>
<td>P. Sokolosky</td>
<td>9/18/06</td>
</tr>
<tr>
<td>PI</td>
<td>Paleontology</td>
<td>High probability for vertebrate fossils, Uinta Formation condition 1. Paleontologic surveys will be needed in this Project Area</td>
<td>John Mayers</td>
<td>7/25/06</td>
</tr>
<tr>
<td>NI</td>
<td>Lands / Access</td>
<td>The proposed rights-of-way (ROWS) are in conformance with the Bureau of Land Management’s multiple use mission governing the affected area. The pipeline ROWs would be constructed adjacent to the road ROWs to minimize impacts. The selected routes avoid other existing utilities in an effort to provide for the safe construction, operation and maintenance of the ROWs; therefore, no mitigation for Lands/Access will be necessary.</td>
<td>Paul Rodriguez</td>
<td>9/18/06</td>
</tr>
<tr>
<td>Determination</td>
<td>Resource</td>
<td>Rationale for Determination</td>
<td>Signature</td>
<td>Date</td>
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<td>---------------</td>
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</tr>
<tr>
<td>NI</td>
<td>Fuels / Fire Management</td>
<td>Project Area is not suitable for hazardous fuel projects. Proposed Action would not hinder suppression actions/access.</td>
<td>Steve Strong</td>
<td>3-13-06</td>
</tr>
<tr>
<td></td>
<td>Slightly positive impact</td>
<td>The Proposed Action would have positive, but minor and temporary effects on the socio-economics of local cities and towns surrounding the Project Area. Project Area work crews would likely increase local revenue through expenditures on lodging, meals, and supplies. In the last 50 years, Uintah County has shifted from an agrarian economy to an oil and gas economy with services to support oil and gas (retail trade, private services, and government services). A single well would have a total drilling and completion cost of approximately $600,000 according to IPAMs. A single well would employ approximately 34 employees over the life of the well (30 initial, 4 long term). Long term employment is approximately 15% of total employment for well development, and would be a more significant contributor to the community due to the fact that it would be more likely to draw employees from the local community than the initial employment, which would draw employees from both local and regional bases. The total drilling and completion cost of this project’s 94 wells would be approximately 1% of the expected cost of the 6331 wells predicted under the No Action alternative of the Vernal Draft RMP. The No Action Alternative was chosen for comparison purposes because it is a prediction of the existing conditions. These predicted amounts are negligible in comparison with the overall picture, therefore there is a slightly positive impact to socioeconomics expected.</td>
<td>Stephanie Howard</td>
<td>9/18/06</td>
</tr>
<tr>
<td>NP</td>
<td>Wild Horses and Burros</td>
<td>Within the bonanza herd area, but no horses are present.</td>
<td>Delbert Clark</td>
<td>9/18/06</td>
</tr>
<tr>
<td>PI</td>
<td>Wilderness characteristics</td>
<td>Portions to the north along the White River contain wilderness characteristics.</td>
<td>Kim A Bartel</td>
<td>3-17-06</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reviewer Title</th>
<th>Signature</th>
<th>Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEPA / Environmental Coordinator</td>
<td>Stephanie Howard</td>
<td>2/5/07</td>
<td></td>
</tr>
<tr>
<td>Authorized Officer</td>
<td>Jerry Kenczka</td>
<td>2/5/07</td>
<td></td>
</tr>
</tbody>
</table>

**FINAL REVIEW:**

*Delete the asterisks“**” in the checklist and these sentences:
*Rationale for Determination is required for all “NIs.” Write issue Statements for “PIs”
**Varies by specific location and BLM Field Office*
TG 450

DETAILED B

DETAILED C

DETAILED A

SEE TC161

11'-0"

4'-3"

19'-0"

19'-0"

0° TO 5°

0° TO 10°

SECTION A-A

138 kV Structure
Shielded, 3 Pole
Dead-End, 0° to 10°

Transmission
Construction Standard

PACIFICORP
PACIFIC POWER UTAH POWER

TG 450
Page 2 of 4
10 Jun 97

Stds Team Leader (C. L. Wright)
Standards Services (M. Brimhall):
138 kV Structure
Shielded, 3 Pole
Dead-End, 65° to 90°
APPENDIX C
SPECIAL STATUS SPECIES
<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
<th>Habitat Association</th>
<th>Potential for Occurrence Within the Proposed Project Area and Cumulative Effects Area</th>
<th>Eliminated From Detailed Analysis (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humpback chub &amp; Gila cypha</td>
<td>FE; SE</td>
<td>Endemic to the Colorado River system within deep, swift-running rivers, with canyon shaded environments.</td>
<td>Low. This species occurs in the Green River. Critical Habitat is identified along the Green River.</td>
<td>No</td>
</tr>
<tr>
<td>Bonytail &amp; Gila elegans</td>
<td>FE; SE</td>
<td>Endemic to the Colorado River system, restricted to the Green River. They use main channels of large rivers and favor swift currents.</td>
<td>Low. This species occurs in the Green River. Critical Habitat is identified along the Green River.</td>
<td>No</td>
</tr>
<tr>
<td>Colorado pikeminnow &amp; Ptychocheilus lucius</td>
<td>FE; SE</td>
<td>Endemic to the Colorado River system. Uses large swift rivers.</td>
<td>High. The Proposed Action will cause annual depletion to the White River in the Upper Colorado River Basin</td>
<td>No</td>
</tr>
<tr>
<td>Razorback sucker &amp; Xyrauchen texanus</td>
<td>FE; SE</td>
<td>Endemic to large rivers of the Colorado River system.</td>
<td>High. The Proposed Action will cause average annual depletion to the White River in the Upper Colorado River Basin</td>
<td>No</td>
</tr>
<tr>
<td>Bald eagle &amp; Haliaeetus leucocephalus</td>
<td>FT; ST</td>
<td>In Utah, breeding occurrences are limited to five locations within four counties (Carbon, Daggett, Grand, and Salt Lake counties). Winter habitat typically includes areas of open water, adequate food sources, and sufficient diurnal perches and night roosts.</td>
<td>High. Bald eagles utilize ungulate winter ranges that provide carrion, and areas of open water. Bald eagles could be seen near the White River during winter months, usually for early November through late March.</td>
<td>No</td>
</tr>
<tr>
<td>Mexican spotted owl &amp; Strix occidentalis lucida</td>
<td>FT; ST; PIF</td>
<td>Found primarily in canyons with mixed conifer forests, pine-oak woodlands and riparian areas. This species nests on platforms and large cavities in trees, on ledges, and in caves. Breeding and nesting season: approximately March through August.</td>
<td>None. The Mexican spotted owl nests, roosts and forages in a diverse array of biotic communities (FWS 2001). The preferred nesting habitat of the species includes complex, thickly forested canyons, steep-walled rocky canyons, uneven-aged, multi-storied mature or old growth stands that have high canopy closure. The Project Area is north of the species known distribution in Utah (Wiley 1995), and northeast of designated critical habitat in Carbon, Emery and Uintah counties. Furthermore, the Project Area does not provide suitable nesting habitat for the species.</td>
<td>No. Mexican spotted owl habitat is identified in 1997 model, SWCA 2005 report, and polygons 1-013A, 1-012B, 1-012A, 1-011A within the Project Area were field verified by BLM as having fair suitability.</td>
</tr>
<tr>
<td>Western yellow-billed cuckoo &amp; Coccyzus americanus occidentalis</td>
<td>FC; ST</td>
<td>Riparian obligate and usually occurs in large tracts of cottonwood/willow habitats. However, this species also has been documented in lowland deciduous woodlands, alder thickets, deserted farmlands, and orchards. Breeding season: late June through July.</td>
<td>Low. This species is known to occur at the Ouray NWR and along the Green River.</td>
<td>No</td>
</tr>
<tr>
<td>Black-footed ferret &amp; Mustela nigripes</td>
<td>FE; SE</td>
<td>Semi-arid grasslands and mountain basins. It is found primarily in association with active prairie dog colonies that contain suitable burrow densities and colonies that are of</td>
<td>Low. The distribution of this species is limited to a nonessential experimental population reintroduced into Coyote Basin, Uintah County starting in 1999.</td>
<td>No</td>
</tr>
<tr>
<td>Species</td>
<td>Status</td>
<td>Habitat Association</td>
<td>Potential for Occurrence Within the Proposed Project Area and Cumulative Effects Area</td>
<td>Eliminated From Detailed Analysis (Yes/No)</td>
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</tr>
<tr>
<td>Canada lynx <em>Lynx lynx canadensis</em></td>
<td>FT; SS</td>
<td>Primarily occurs in Douglas-fir, spruce-fir, and subalpine forests at elevations above 7,800 feet amsl. The lynx uses large woody debris, such as downed logs and windfalls.</td>
<td>None. If extant in Utah, this species most likely occurs in montane forests in the Uinta Mountains.</td>
<td>Yes. Suitable habitat for this species does not occur within the Project Area.</td>
</tr>
<tr>
<td>Roundtail chub <em>Gila robusta</em></td>
<td>ST</td>
<td>Adults inhabit low to high flow areas in the Green River; young occur in shallow areas with minimal flow.</td>
<td>Low. No perennial streams flow in the Project Area.</td>
<td>No</td>
</tr>
<tr>
<td>Bluehead sucker <em>Catostomus discobolus</em></td>
<td>SS</td>
<td>Occupies a wide range of aquatic habitats ranging from cold, clear mountain streams to warm, turbid rivers.</td>
<td>Low. No perennial streams flow in the Project Area.</td>
<td>No</td>
</tr>
<tr>
<td>Flannelmouth sucker <em>Catostomus latipinnis</em></td>
<td>SS</td>
<td>Adults occur in riffles, runs, and pools in streams and large rivers, with the highest densities usually in pool habitat. Young live in slow to moderately swift waters near the shoreline areas.</td>
<td>Low. This species occurs in the Green River.</td>
<td>No</td>
</tr>
<tr>
<td>Ferruginous hawk <em>Buteo Regalis</em></td>
<td>ST</td>
<td>Resides mainly in lowland open desert terrain characterized by barron cliffs and bluffs, piñon-juniper woodlands, sagebrush-rabbit brush, and cold desert shrub. Nesting habitat includes promontory points and rocky outcrops.</td>
<td>Moderate. This species is known to occur in the West Desert and the Uinta Basin as a summer resident and a common migrant.</td>
<td>No</td>
</tr>
<tr>
<td>American white pelican <em>Pelecanus erythrorhynchos</em></td>
<td>SS</td>
<td>Inhabits areas of open water including large rivers, lakes, ponds, and reservoirs with surrounding habitats ranging from barren to heavily vegetated sites. Typically nests on isolated islands in lakes or reservoirs; rarely nests on peninsulas.</td>
<td>Low. In Utah, the species is known to nest on islands associated with Great Salt and Utah lakes. In northeastern Utah, the species occurs as a transient on larger water bodies. Pelicans utilize ponds at Pariette Wetlands, Pelican Lake, Ouray Refuge, and occasionally on the Green River.</td>
<td>Yes. Review of district files along with an onsite visit revealed no nests.</td>
</tr>
<tr>
<td>Swainson’s hawk <em>Buteo swainsoni</em></td>
<td>SS</td>
<td>Inhabits grasslands, deserts, agricultural areas, shrublands, and riparian forests. Breeding birds nest in trees in or near open areas. In Utah, the species also occurs in marshlands; rarely occurs in brushy areas or scrub desert.</td>
<td>Low. Occur in the Uinta Basin as an uncommon summer resident and common migrant. Requires trees of moderate height for nesting. No Swainson’s hawk nests have been documented within the project vicinity.</td>
<td>No</td>
</tr>
<tr>
<td>Greater sage grouse <em>Centrocercus urophasianus</em></td>
<td>SS; PIF</td>
<td>Inhabits upland sagebrush habitat in rolling hills and benches. Breeding occurs on open leks (or strutting grounds) and nesting and brooding occurs in upland areas and meadows in proximity to water and generally within a 2-mile radius of the lek. During winter, sagebrush habitats at submontane elevations commonly are used.</td>
<td>Low. The species is widespread, but declining, with extant populations in Uintah and Daggett counties. No known leks are approximately 6 miles of the Project Area.</td>
<td>No</td>
</tr>
<tr>
<td>Species</td>
<td>Habitat Association</td>
<td>Potential for Occurrence Within the Proposed Project Area and Cumulative Effects Area</td>
<td>Eliminated From Detailed Analysis (Yes/No)</td>
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<tr>
<td>Mountain plover Charadrius montanus</td>
<td>In the Uinta Basin, small mountain plover populations breed in shrub-steppe habitat where vegetation is sparse and sagebrush communities are dominated by <em>Artemisia</em> spp. with components of black sage and grasses. Nest locations also vary with respect to topography (nests were located on flat, open ground; on the top or at the base of slopes; or very close to large rocky outcroppings). Low. The only known breeding population of mountain plover in Utah is located on Myton Bench.</td>
<td>Yes. Species has not been documented using the habitat. No historical sightings have been documented within the Project Area.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-billed curlew Numenius americanus</td>
<td>Inhabits shortgrass prairies, alpine meadows, riparian woodlands, and reservoir habitats. Breeding habitat includes upland areas of shortgrass prairie or grassy meadows with bare ground components, usually near water. Low. Widespread migrant in Utah. Breeding birds are fairly common but localized, primarily in central and northwestern Utah. Potential nesting has been reported in Uintah County, but has not been confirmed.</td>
<td>Yes. Suitable habitat for this species does not occur within the Project Area.</td>
<td></td>
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</tr>
<tr>
<td>Black tern Chlidonias niger</td>
<td>Habitat includes reservoirs, lakes, ponds, marshes with open water, and sewage lagoons in association with tall tules, reeds, or other vegetation along the edge of water bodies. Nests typically are floating and are made from pieces of cattail and other marsh vegetation. Low. Localized breeder in Utah at Utah, Great Salt, and Pelican lakes and along the Green River. In Uintah County, the species is known to nest on sandbars in and along the Green River.</td>
<td>Yes. Suitable habitat for this species does not occur within the Project Area.</td>
<td></td>
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</tr>
<tr>
<td>Short-eared owl Asio flammeus</td>
<td>Inhabits arid grasslands, agricultural areas, marshes, and occasionally open woodlands. In Utah, cold desert shrub and sagebrush-rabbit brush habitats also are utilized. Typically a ground nester. Low. The species breeds in northern Utah and occurs as a migrant potentially throughout the State. Known to occur in Uintah County, with occurrence probable in Duchesne County.</td>
<td>Yes. Suitable habitat for this species does not occur within the Project Area.</td>
<td></td>
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</tr>
<tr>
<td>Burrowing owl Athene cunicularia</td>
<td>Inhabits desert, semi-desert shrubland, grasslands, and agricultural areas. Nesting habitat primarily consists of flat, dry, and relatively open terrain; short vegetation; and abandoned mammal burrows for nesting and shelter. Low. Burrowing owls nest in desert/grassland habitats and are found in close association with prairie dog colonies in Northeastern Utah.</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lewis’ woodpecker Melanerpes lewis</td>
<td>Inhabits open habitats including pine forests, riparian areas, and pinyon-juniper woodlands. Breeding habitat typically includes ponderosa pines and cottonwoods in stream bottoms and farm areas. The species inhabits agricultural lands and urban parks, montane and desert riparian woodlands, and submontane shrub habitats. Low. In Utah, the species is widespread, but is an uncommon nester along the Green River. Breeding by this species has been observed in Ouray and Uintah counties, and along Parriette Wash.</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common yellowthroat Geothlypis trichas</td>
<td>Documented habitat usage includes marshes and wet hummocks as well as montane and desert riparian woodlands. Low. Occurs throughout Utah, with probable occurrence in Uintah county.</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue grosbeak Guiraca caerulea</td>
<td>Inhabits desert riparian woodlands (including areas of tamarisk invasion), marshes, grasslands, and rural areas. Suitable nest habitat includes dense vegetation in otherwise open areas. Low. Known to breed in the southern portion of Utah. However, this species has been documented at the Ouray National Wildlife Refuge and along the Green River.</td>
<td>No</td>
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</tr>
<tr>
<td>Species</td>
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</tr>
<tr>
<td>Bobolink <em>Dolichonyx oryzivorus</em></td>
<td>SS</td>
<td>Inhabits mesic and irrigated meadows, riparian woodlands, and subalpine marshes at lower elevations (2,800 to 5,500 feet amsl). Suitable breeding habitat for this ground nester includes tall grass, flooded meadows, prairies, and agricultural fields; forbs and perch sites also are required.</td>
<td>Low. The species breeds in isolated areas of Utah, primarily in the northern half of the State. No breeding by this species has been documented within the proposed Project Area.</td>
<td>Yes. Suitable habitat for this species does not occur within the Project Area.</td>
</tr>
<tr>
<td>White-tailed prairie dog <em>Cynomys leucurus</em></td>
<td>SS</td>
<td>Inhabits grasslands, plateaus, plains and desert shrub habitats. White-tailed prairie dogs form colonies or “towns” and spend much of their time in underground burrows and hibernating during the winter.</td>
<td>Low. Prairie dogs colonies due exist within the area. Prairie dogs are an obligate species to several other State-sensitive species, such as ferruginous hawk, mountain plover, and burrowing owl, in that these species depend on them for food, shelter, nesting habitat or habitat manipulation.</td>
<td>No</td>
</tr>
<tr>
<td>Spotted bat <em>Euderma maculatum</em></td>
<td>SS</td>
<td>Inhabits desert shrub, sagebrush-rabbitbrush, pinyon-juniper woodland, and ponderosa pine and montane forest habitats. The species also uses lowland riparian and montane grassland habitats. Suitable cliff habitat typically appears to be necessary for roosts/hibernacula. Spotted bats typically do not migrate and use hibernacula that maintain a constant temperature above freezing from September through May.</td>
<td>Low. The species potentially occurs throughout Utah; however, no occurrence records exist for the extreme northern or western parts of the State. Known occurrences have been reported in northeastern Uintah County.</td>
<td>No</td>
</tr>
<tr>
<td>Townsend’s big-eared bat <em>Corynorhinus townsendii</em></td>
<td>SS</td>
<td>Inhabits a wide range of habitats from semidesert shrublands and pinyon-juniper woodlands to open montane forests. Roosting occurs in mines and caves, in abandoned buildings, on rock cliffs, and occasionally in tree cavities. Foraging occurs well after dark over water, along margins of vegetation, and over sagebrush.</td>
<td>Low to moderate. The species occurs in Duchesne and Uintah counties. Relative to the Project Area, one individual was collected at the Ouray National Wildlife Refuge in 1980. Roosting habitat potentially could occur in areas where rock cliffs and caves are present.</td>
<td>Yes. Suitable habitat for this species does not occur within the Project Area.</td>
</tr>
<tr>
<td>Species</td>
<td>Status</td>
<td>Habitat Association</td>
<td>Potential for Occurrence Within the Proposed Project Area and Cumulative Effects Area</td>
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</tr>
<tr>
<td><strong>Brazilian free-tailed bat</strong></td>
<td>SS</td>
<td>Typically inhabits woodland to lowland areas where the species roosts in caves, crevices in cliff faces, buildings, and under bridges. This species inhabits urban areas, lowland riparian woodlands, desert shrub, and ponderosa pine forests. Known to winter (some remaining active) in the southwestern part of the State.</td>
<td>Low. The species is known to occur in all but the northernmost parts of Utah (Box Elder and Daggett counties). Roosting habitat for this species potentially could occur in areas where rock cliffs and caves are present, as discussed above for Townsend’s big-eared bat.</td>
<td>Yes. Suitable habitat for this species does not occur within the Project Area.</td>
</tr>
<tr>
<td><strong>Northern river otter</strong></td>
<td>SS</td>
<td>Inhabits rivers, lakes, and riverine habitats, with associated riparian vegetation. The species occurs in montane forests to desert canyons within areas of suitable habitat.</td>
<td>Moderate. Occurrence by this species has been reported in at least 18 rivers and streams in northern, central, and eastern Utah between 1978 and 1988. This species is known to utilize the Green River.</td>
<td>Yes. Suitable habitat for this species does not occur within the Project Area.</td>
</tr>
<tr>
<td><strong>Thirteen-lined ground squirrel</strong></td>
<td>SS</td>
<td>Inhabits plains, grasslands, sagebrush, rabbitbrush, and montane meadows, but also utilizes disturbed sites such as pastures, prairie dog towns, roadsides, golf courses, and cemeteries. The species prefers cultivated field and grassland habitats. Heavier soils (e.g., clays, loams, or sandy-loams) are preferred. The species hibernates between October and April.</td>
<td>Low. In Utah, the species is native to the Uinta Basin where it is known to occur in Uintah and Duchenes counties.</td>
<td>Yes. Suitable habitat for this species does not occur within the Project Area.</td>
</tr>
<tr>
<td><strong>Milk snake</strong></td>
<td>SS</td>
<td>Occurs in cold desert through montane regions where it inhabits grassland, shortgrass prairie, sagebrush, desert scrub, ponderosa pine, and piñon-juniper woodland habitats.</td>
<td>Moderate. Known to occur in the Uinta Basin region. Individuals could be present at some portion of their life cycle.</td>
<td>Yes. District files were reviewed and no historical sightings were documented within the Project Area. The proposed project may cause individuals to move to other suitable habitat. The proposed project would not lead to the listing of the species.</td>
</tr>
<tr>
<td><strong>Smooth Greensnake</strong></td>
<td>SS</td>
<td>Occurs in grassy and moist areas including meadows.</td>
<td>Low. The snake is known to occur in Uintah, Abajo, and Wasatch Counties. Riparian habitat along the White River provides potential habitat for the species.</td>
<td>No.</td>
</tr>
<tr>
<td><strong>Great Plains rat snake</strong></td>
<td>SS</td>
<td>Occurs in eastern Utah in major valleys of the Colorado River. Habitats include stream courses, river bottoms and rocky wooded hillsides. It is a secretive snake which spends much of the time in rodent burrows and is nocturnal during warm weather.</td>
<td>Low. Occurs in Uintah county. Great Plains rat snakes have been identified at Ouray Wildlife Refuge.</td>
<td>Yes. Suitable habitat for this species does not occur within the Project Area.</td>
</tr>
</tbody>
</table>
### SUMMARY OF POTENTIAL OCCURRENCE of
### SPECIAL STATUS PLANT SPECIES for
### KERR-MCGEE’S PROPOSED BONANZA PROJECT

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>STATUS</th>
<th>HABITAT</th>
<th>POTENTIAL for and/or OCCURRENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Arabis vivariensis</em> park rock cress</td>
<td>Sensitive</td>
<td>Webber Formation sandstone and limestone outcrops in mixed desert shrub and pinyon-juniper communities. 5000-6000ft.</td>
<td>None – No populations, potential or suitable habitat occurs for this species in this area.</td>
</tr>
<tr>
<td><em>Astragalus equisulensis</em> horseshoe milkvetch</td>
<td>Candidate</td>
<td>Duchesne River Formation soils in sagebrush, shadscale, horsebrush and mixed desert shrub communities. 4790-5185ft.</td>
<td>None – No populations, potential or suitable habitat occurs for this species in this area.</td>
</tr>
<tr>
<td><em>Astragalus hamiltonii</em> Hamilton milkvetch</td>
<td>Sensitive</td>
<td>Lapoint and Dry Gulch members of the Duchesne River Formation, Mowery shale, Dakota and Wasatch Formation soils in pinyon-juniper and desert shrub communities. 5240-5800ft</td>
<td>None – No populations, potential or suitable habitat occurs for this species in this area.</td>
</tr>
<tr>
<td><em>Cirsium ownbeyi</em> Ownbey thistle</td>
<td>Sensitive</td>
<td>East flank Uinta Mountains. In mesic sites within canyons of mixed sagebrush, juniper and riparian communities. 5500-6200ft.</td>
<td>None – No populations, potential or suitable habitat occurs for this species in this area.</td>
</tr>
<tr>
<td><em>Hymenoxys lapidicola</em> Rock hymenoxis</td>
<td>Sensitive</td>
<td>Sandy soils on ledges and soil filled crevices in the Weber Formation associated with Blue Mountain. (5700-8100 feet).</td>
<td>None – No populations, potential or suitable habitat occurs for this species in this area.</td>
</tr>
<tr>
<td><em>Penstemon acaulis</em> stemless penstemon</td>
<td>Sensitive</td>
<td>Daggett County. Semi-barren substrates in the Browns Park Geological formation. Pinyon-juniper and sagebrush-grass communities. 5840-7285 ft.</td>
<td>None – No populations, potential or suitable habitat occurs for this species in this area.</td>
</tr>
<tr>
<td><em>Penstemon flowersii</em> Flowers penstemon</td>
<td>Sensitive</td>
<td>Clay badlands from Myton to Roosevelt and Randlett, in shadscale and desert communities. 5000-5400ft.</td>
<td>None – No populations, potential or suitable habitat occurs for this species in this area.</td>
</tr>
<tr>
<td><em>Penstemon gibbensii</em> Gibbens penstemon</td>
<td>Sensitive</td>
<td>Brown’s Park in Daggett County. Sandy and shaley (Green River Shale) bluffs and slopes with juniper, thistle, Eriogonum, Elymus, serviceberry, rabbit brush &amp; Thermopsis. 5500-6400 ft.</td>
<td>None – No populations, potential or suitable habitat occurs for this species in this area.</td>
</tr>
<tr>
<td><em>Penstemon goodrichii</em> Goodrich penstemon</td>
<td>Sensitive</td>
<td>Lapoint-Tridell-Whiterocks area. Lapoint and Dry Gulch members of the Duchesne River Formation on blue gray to reddish bands of clay badlands. 5590 to 6215 ft.</td>
<td>None – No populations, potential or suitable habitat occurs for this species in this area.</td>
</tr>
<tr>
<td>SPECIES</td>
<td>STATUS</td>
<td>HABITAT</td>
<td>POTENTIAL for and/or occurrence</td>
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<tr>
<td><em>Penstemon grahamii</em> Graham beardtongue</td>
<td>Candidate</td>
<td>East Duchesne and Uintah Counties. Evacuation Creek and Lower Parachute Member of the Green River Formation. Shaley knolls in sparsely vegetated desert shrub and pinyon-juniper communities. 4600-6700 ft</td>
<td>None – No populations, potential or suitable habitat occurs for this species in this area.</td>
</tr>
<tr>
<td><em>Penstemon scariosus var. albiflavis</em> White River penstemon</td>
<td>Candidate</td>
<td>Evacuation Creek and Lower Parachute Creek Member of the Green River Formation on sparsely vegetated shale slopes in mixed desert shrub and pinyon-juniper communities. 5000-6000 ft</td>
<td>None – No populations, potential or suitable habitat occurs for this species in this area.</td>
</tr>
<tr>
<td><em>Schoencrambe argillacea</em> Clay thelopody</td>
<td>Threatened</td>
<td>Bookcliffs - On the contact zone between the upper Uinta and lower Green River shale formations in mixed desert shrub of Indian ricegrass and pygmy sagebrush. 5000-5650 ft</td>
<td>None – No populations, potential or suitable habitat occurs for this species in this area.</td>
</tr>
<tr>
<td><em>Schoencrambe suffrutescens</em> Shrubby reed-mustard</td>
<td>Endangered</td>
<td>Evacuation Creek and lower Parachute Creek Members of the Green River Formation on calcareous shales in pygmy sagebrush, mountain mahogany, juniper and mixed desert shrub communities. 5400-6000 ft</td>
<td>None – No populations, potential or suitable habitat occurs for this species in this area.</td>
</tr>
<tr>
<td><em>Sclerocactus glaucus</em> (<em>Sclerocactus brevispinus</em>) Uinta Basin hookless cactus</td>
<td>Threatened</td>
<td>Gravelly hills and terraces on Quaternary and tertiary alluvium soils in cold desert shrub communities. 4700-6000 ft</td>
<td>Yes – There are no known occurrences in the Project Area, however habitat does occur here.</td>
</tr>
<tr>
<td><em>Spiranthes diluvialis</em> Ute lady’s tresses</td>
<td>Threatened</td>
<td>Streams, bogs and open seepages in cottonwood, salt cedar, willow and pinyon-juniper communities on the south and east slope of the Uintah Range and it’s tributaries, and the Green River from Brown’s Park to Split mountain. Potentially in the Upper reaches of streams in the Book Cliffs. 4400-6810 ft</td>
<td>Yes – There are no known occurrences in the Project Area, however habitat does occur here.</td>
</tr>
</tbody>
</table>

** Based on BLM State Special Status Species List, field survey data, geological and soil maps, species publications, aerial photography, and species maps.
Figure: 5

UNTHAI COUNTY, UT

BONANZA AREA EA

Project Area

Uintah County, Utah

Soils

Kerr-McGee

Date: October 20, 2006

Buys & Associates, Inc.

Source: NRCS SSURGO,
Introduction and Purpose

Under the Proposed Action, Kerr-McGee Oil and Gas Onshore LP (Kerr-McGee) proposes natural gas development in the Bonanza Project Area (Project Area). The Project Area is located approximately 40 miles south of Vernal, Utah, near the town of Bonanza (Figure 2-X). The Project Area is comprised of approximately 12,699 acres within Uintah County, Utah. The purpose of this Transportation Plan is to assist the Bureau of Land Management (BLM), Vernal Field Office and Uintah County in transportation planning for future road development in the Project Area.

Scope

The majority of existing roads within the Project Area are under the jurisdiction of governmental agencies (e.g., BLM and Uintah County), and responsibility for maintenance of those roads rests with those agencies. However, maintenance of oil and gas spur roads is the responsibility of the operator. Non-oil and gas access roads would be maintained, by either the government agency or right-of-way holders.

Access

Access to the Project Area is provide by State Highway 45 from Vernal. From Highway 45 project traffic would use Little Bonanza Road, Fidlar Road, and Seven Sisters Road. All County roads that would be used to access the Project Area are Class 1-B roads.

Existing Road Network

The transportation system within the Project Area consists of approximately 62 miles of unpaved access roads that service existing oil and gas operations. Of the existing network, 38 miles are classified as Class 1-B roads and 26.3 miles are classified as Class D roads. Class 1-B roads are county-claimed roads which are maintained by Uintah County; Class D roads are county-claimed roads which are not maintained by the county. The remaining 23.2 miles of road in the Project Area are existing oil and gas spur roads (Uintah County 2005).

Existing Traffic

Use of transportation corridors is monitored by the Utah Department of Transportation (UDOT 2004) and Uintah County (Uintah County 2005). Traffic volume data is expressed as Average Daily Traffic (ADT). ADT for the roads that provide access to the Project Area are listed below in Table A-1.

<table>
<thead>
<tr>
<th>Route</th>
<th>AADT</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Highway 45 (at intersection with Red Wash Highway)</td>
<td>1,195 vehicles</td>
</tr>
<tr>
<td>Fidlar Road</td>
<td>1,000 vehicles</td>
</tr>
</tbody>
</table>

UDOT. 2004. Traffic on Utah Highways
Uintah County Roads Department. 2006.
Proposed Road Network Modifications

Under the Proposed Action, approximately 43.6 miles of new road would be constructed. Of this, 24 miles of roads would be constructed independent of pipeline and 19.6 miles of road would be co-located with pipelines. New roads without co-located pipeline would be built on a 30-foot wide ROW. Construction within the 30-foot wide ROW would result in the disturbance of approximately 87 acres or 0.6% of the surface area in the field. Where new roads and surface pipelines are proposed together (co-located), the initial ROW for construction would be 50 feet wide. Construction within the 50-foot wide ROW (roads and pipeline) would result in the disturbance of approximately 119 acres or approximately 0.9% of the surface area in the Project Area. Upon completion of road construction and pipeline installation, the co-located road and pipeline ROWs would be reduced to a 30-foot width in order to accommodate the road travel surface, borrow ditches, and the surface area occupied by the pipeline.

When feasible and agreed upon by the County and/or BLM (as appropriate), Kerr-McGee would reclaim all disturbed areas not needed for production activities. Portions of access road ROWs not needed in the function of the road would be reclaimed.

The Proposed Action is expected to have a life of approximately 20-30 years. The long-term residual disturbance related to road construction is estimated to be 158 acres, or 1.2% of the Project Area.

Roads constructed on federal land would comply with standards set forth in the *Surface Operating Standards for Oil and Gas Exploration and Development (Fourth edition: 2005)*, also known as the “Gold Book.”

Constructed or upgraded roads on federal land would be maintained as resource, local, or collector roads. The BLM and Uintah County will determine the maintenance standard for each road used by Kerr-McGee; and the period for which they will be maintained at the appropriate standard. A brief definition of each type of road follows.

**Resource Road**
Resource roads are single lane roads that carry a low volume of traffic at a low speed (approximately 15 mph) to individual well locations. Resource roads are generally reclaimed upon field abandonment.

**Local Road**
Local roads are designed as single or two-lane roads. The design of these roads is based upon compatibility with the local landscape. The purpose of local roads is to provide access to a number of well locations. These roads generally connect with roads that already exist in the public road system. These roads may be reclaimed after field abandonment.

**Collector Road**
Collector roads become an extension of the existing public road system; therefore, these roads accommodate and serve many uses. Collector roads are maintained to the highest standard for safety and comfort.

All roads required for the project would be maintained as necessary to provide all weather access. Maintenance on collector and local roads is anticipated to occur at least twice per year. Resource road maintenance is required at least annually. Kerr-McGee would assume responsibility for all
maintenance activities on BLM ROWs and Uintah County Class D roads. Currently there are no maintenance standards for Class D roads; however, Uintah County encourages operators to follow the BLM’s Gold Book guidelines (Uintah County Roads 2006). If roads become impassable, the BLM or Uintah County may deny access until the roads are repaired and the potential for resource damage is alleviated.

**Disposition of Access Roads after Well Abandonment**

At the end of the productive life of each well, the access road would be reclaimed in accordance with the requirements of the relevant surface management agency. On private land, the road reclamation would be in accordance with the requirements of the landowner. Reclamation of the road would generally involve re-contouring the surface to the approximate natural contours, re-establishing soil conditions, and reseeding with seed mixtures as specified by the relevant surface management agency or landowner. Reseeding procedures may be repeated until the relevant agency or landowner determines that the reclamation has been successful.

**Estimated Traffic Volumes**

Kerr-McGee plans to develop and produce 94 wells and pads. Vehicle traffic would be the highest during the development (construction, drilling and completion) stage of the project. Vehicles would be used to transport equipment and personnel to the Project Area for construction of well pads, access roads, drilling, and completion of wells. As indicated in the Proposed Action, an average of approximately 30 wells could be drilled annually. Based upon this drilling schedule, ADT associated with development phase would be approximately 70 roundtrips per day from either Vernal or Roosevelt. Table A-2 provides an estimate of the traffic that will be generated during the construction phase if the Proposed Action is implemented.

Peak traffic from oil and gas related activity is expected to occur in the morning and evening hours at the time of shift changes for development crews. Table A-3 shows the estimated changes in traffic on the major access roads as a result of the Proposed Action.

<table>
<thead>
<tr>
<th>Table C-2: Estimated Traffic Related to the Proposed Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Traffic</strong></td>
</tr>
<tr>
<td>Well Construction and Development</td>
</tr>
<tr>
<td>Well Pad and Access Road Construction (4 days)</td>
</tr>
<tr>
<td>Drilling (16-20 days)</td>
</tr>
<tr>
<td>Completion /Testing (7-10 days)</td>
</tr>
<tr>
<td>Pipe Line Construction (4 days)</td>
</tr>
<tr>
<td><strong>Total Well Construction and Development (90-94 days)</strong></td>
</tr>
</tbody>
</table>

Table C-3: Estimated Traffic Increases on Roads Servicing the Project Area

<table>
<thead>
<tr>
<th>Route</th>
<th>Existing ADT</th>
<th>ADT Development</th>
<th>Percent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway 45 (South Bound to Power Plant)</td>
<td>1,195</td>
<td>70</td>
<td>6%</td>
</tr>
<tr>
<td>Fidlar Road</td>
<td>1000</td>
<td>70</td>
<td>7%</td>
</tr>
</tbody>
</table>

Source: D. Burns, Uintah County, Personal Communication, January 2005
UDOT 2004, Traffic on Utah Highways

Kerr-McGee Committed Measures

- All employees would strictly adhere to all traffic laws and regulations, including speed limits.
- As part of normal operational winter maintenance, roads would be plowed the minimum amount necessary to allow for safe navigation. Plows would provide breaks in the snow piled berms to allow free movement of wildlife across all roads.
- Kerr McGee and the SMA would make an on-site inspection of each proposed well pad, access road, and pipeline alignment within the Project Area, so that site-specific recommendations and mitigation measures can be developed to avoid or eliminate impacts to resources of concern.

Gold Book Standards and Guidelines

- Interim and final reclamation activities would be conducted as described in the Bonanza Area Environmental Assessment (EA) Section 2.2.9- Field Abandonment.
- All project related personnel and vendors would limit traffic to roads and rights of way.
- Existing cattleguards would be regularly monitored and maintained in safe, working order. This would include removing debris and sediment from the catchment pit beneath the cattleguard and off the existing roadway, repairing or replacing broken wings, braces, or bars on the cattleguard itself to ensure safe vehicle passage and maintain control of livestock movement in the area.
- Kerr-McGee will coordinate with the SMA on timing restrictions for wildlife. Timing restrictions can also be found in Section 4.9 and 4.10-(Wildlife).
- To the extent possible, equipment and bulk supplies would be delivered and stored on the well pads to reduce multiple deliveries of storable equipment.
- Roads constructed on federal lands would comply with standards set forth in the Surface Operating Standards for Oil and Gas Exploration and Development (Fourth edition: 2005), also know as the “Gold Book including:
  - New roads would be constructed to an appropriate standard no higher than necessary to accommodate the intended use.
  - The AO would determine whether professional engineering design and construction oversight is needed. The need for professional design and oversight should be based on factors such as topography, soils, hydrology, and safety.
  - To maximize visibility of both coming and going traffic and to maintain user speed turnouts would be constructed on all single lane roads on all blind curves and as needed along ridges. On roads open to the public, turnouts must be located at 1,000-foot intervals or be intervisible (mutually visible), whichever is less. Typical turnout dimensions would be 150’ long x 30’ wide.
  - Design well-access routes and non-thoroughfares routes for speeds between 10 to 30 miles an hour. Post speed limit signs on these roads as appropriate.
• Confirm with county road department on posted speeds for county-maintained roads and thoroughfares in the Project Area. Request sufficient posted speed limits signs as appropriate.

• Maximize natural topographic contours, fitting as closely as possible to the natural terrain. Consideration would be given to vehicle operational limitations, soil types, environmental constraints and traffic service levels. Gradients would not exceed 8%, except for pitch grades of 300 feet or less; or 16% in dissected or mountainous terrain (unless prior approval is provided from the SMA).

• Drainage over the entire road would be controlled by the best combination of drainage dips, in- and out-sloping, crowning, natural rolling topography, ditch turnouts, low-water crossings, ditches, and culverts. Ditch grades should be no less than 0.5% to provide positive drainage and avoid siltation.

• Where topography allows, crossing at streams and ephemeral drainages prone to flooding would be designed at right angles to the streambed and in a manner ensuring bank stability.

• Culvert and/or drainage crossings would be designed to accommodate a 25-year or greater storm frequency without development of a static head at the pipe’s inlet. Any new culverts would undamaged and made of corrugated metal pipe. Culverts would be laid on natural ground or at the original elevation of any drainage crossed and have a minimum diameter of 18 inches (considering slope, soils, area being drained, precipitation and likelihood of storm events) and extend at least 1 foot beyond the toe of any slope. Rip-rap or other energy-dissipating devises would be placed at the outlet end of the culvert.

• Gravel or other surfacing would be used for “soft” road sections, steep grades, highly erosion soils, clay soils or where all-weather access is needed.

• Water or magnesium-chloride would be applied daily, where needed, to suppress fugitive dust.

• Maximize successful interim and eventual final reclamation. In the interim revegetate road ditches and cut and fill slopes. Salvage of topsoil would be a priority where available during road construction. Topsoil would be respread to the greatest degree practical on cut slopes, fill slopes and borrow ditches prior to seeding. On freshly topsoiled slopes, hydromulch or other sediment-control measures would be applied where appropriate.

• Construction and/or maintenance activities associated with access routes would not occur on frozen or saturated soils when driving on such would result in surface ruts greater than 4 inches along straight travel routes.
Sources

Uintah County Roads Department. 2006. Tyler Ashcroft personal correspondence with Sharon Bedellsky. 9/5/06.

BLM. 2004. Modified from Transportation Plan, Jonah Infill Drilling Project. Appendix A.

BLM. 2006. *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development*.


Uintah County. 2005. GIS Database.
APPENDIX F
ENDANGERED SPECIES ACT
SECTION 7 CONSULTATION
MEMORANDUM

To: Utah Field Supervisor, Ecological Services, U.S. Fish & Wildlife Service, Salt Lake City, Utah

From: Field Manager, Bureau of Land Management, Vernal Field Office


The draft Environmental Assessment/Biological Assessment (EA/BA) for Kerr-McGee’s Bonanza Field Development project proposal (EA #UT-080-2006-240) was posted on the Environmental Notification Bulletin Board (ENBB) on September 8, 2006, for review and comment. Informal consultation, through phone calls and meetings, has been conducted between this office and the Service both prior and during the comment period for this EA/BA.

Attached is the final EA/BA for the Bonanza Field Development project. Pursuant to Section 7 of the Endangered Species Act of 1973, and in conformance with 50 CFR 402.12, the Vernal Field Office is requesting concurrence with the determinations made for the threatened, endangered and candidate species evaluated in the EA/BA and conclude formal consultation for this project.

Please refer to the attached EA/BA.

PROJECT OVERVIEW

Background

Kerr-McGee has notified the BLM Vernal Field Office that it proposes to develop natural gas resources underlying oil and gas leases owned by Kerr-McGee within the Bonanza Area in
Uinta Basin Hookless Cactus (*Sclerocactus glaucus*)

Surface disturbance within potential habitat for the cactus would result in the loss or modification of that habitat, thereby potentially rendering it unsuitable for establishment of the species. Surface disturbance within occupied habitat for the species could result in a direct take of the species. However, based on the conservation measures outlined in Section 4.2.21, direct take of the species would be avoided.

Indirect effects to this cactus species include potential for illegal collection from increased access into or near this species habitat. Under the Proposed Action approximately 43.6 miles of new roads would be constructed and maintained until no longer needed. Increased access to the Bonanza Project Area via these proposed roads would result in increased visitation by the public, and increase the potential for possibility for illegal collection of this species, if occupied habitats occur there.

Increased disturbance and new roads in the Project Area as proposed could result in the spread of invasive and noxious weeds species, as well as weed invasions in Uinta Basin hookless cactus habitat. However, with the implementation of the applicant-committed measures to control noxious and invasive weed species, this impact would be effectively minimized.

Changes in surface water flow regimes associated with road and pad construction could increase sedimentation to Uinta Basin hookless cactus habitat. Many of the known cactus populations are associated with small, ephemeral drainages or areas where stormwater flows across slopes, but does not accumulate. Surface disturbance associated with the construction of well pads, access roads, pipelines, etc., can lead to increased soil erosion and stormwater runoff with heavy concentrations of sediment. The cactus is intolerant of heavy sedimentation. The BLM has observed incidences where natural sediment deposition (e.g., sedimentation not caused by human activities) caused the loss of cacti or adversely modified suitable habitat. Fugitive dust from vehicle traffic on roadways in occupied habitat could coat individual cactus with dust reducing transpiration and affecting the long-term health of individual plants. Fugitive dust could also impact insect species serving as pollinator species for this cactus. Applicant-committed measures requiring the use of water to control fugitive dust and construction designs addressing drainage would reduce the potential impacts to this federally-listed cactus species.

Based on this assessment, BLM has determined that the Proposed Action would result in a “may affect, not likely to adversely affect” situation for the Uinta Basin hookless cactus.

**Mitigation Measures:**

In order to minimize effects to the federally threatened Uinta Basin hookless cactus, the Bureau of Land Management (BLM) in coordination with the U.S. Fish and Wildlife Service (Service), developed the following avoidance and minimization measures. Integration of and adherence to these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance) are in compliance with the Endangered Species Act (ESA). Kerr-McGee would adhere to the following avoidance and minimization measures:
j. Buffers of 100 feet minimum between the edge of the right of way (roads and surface pipelines) or surface disturbance (well pads) and plants and populations would be incorporated,

k. Surface pipelines would be laid such that a 100 foot buffer exists between the edge of the right of way and the plants, use stabilizing and anchoring techniques when the pipeline crosses the habitat to ensure the pipelines don't move towards the population,

l. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,

m. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,

n. Designs would avoid concentrating water flows or sediments into occupied habitat,

o. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and

p. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.

5. Occupied Uinta Basin hookless cactus habitats within 100 feet of the edge of the surface pipelines' right-of-ways, 100 feet of the edge of the roads' right-of-ways, and 100 feet from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring would include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports would be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures would be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service.

6. Reinitiation of section 7 consultation with the Service would be sought immediately if any loss of plants or occupied habitat for the Uinta Basin hookless cactus occurs as a result of project activities.

7. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures would be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

8. No herbicide spraying would be allowed within 300 feet of Uinta Basin hookless cactus individuals. Any weed control work to be done in suitable and/or occupied habitat for this species would be completed by hand.

Ute Ladies'-tresses (*Spiranthes diluvialis*)

Due to high salt content in the soils associated with the White River, there is only marginal potential habitat for Ute ladies'-tresses to occur within the Bonanza Project Area. Ute ladies'-tresses require recurrent disturbance, e.g., sediment and some debris deposition, in the riparian zone to sustain their populations. Sediment to the White River riparian zone is directly affected by the numerous ephemeral drainages which carry flood-borne sediment and
b. When employing directional drilling techniques, ensure that drilling does not intercept or degrade alluvial aquifers

8. Re-vegetate with native species indigenous to the area and non-native species that are not likely to invade other areas, all areas of surface disturbance within riparian areas and/or adjacent uplands.

Mexican Spotted Owl (*Strix occidentalis lucida*)

Since MSO could potentially utilize “fair” and “good” habitats in or near the “blocked” portion of the greater Project Area for future nesting sites, any surface disturbance within 0.5 miles of such habitat that may occur in these areas could prevent the areas from being selected and used in the future. These impacts would continue throughout the life of the project. As the Proposed Action would not include any development within the White River corridor potential impacts to the owl would be minimal. Furthermore, based on the conservation measures outlined in Section 4.2.21, which would require compliance with USFWS MSO survey guidelines and PAC identification, there would be no direct effects on breeding or nesting MSO within the Project Area.

Based on this assessment, BLM has determined that the Proposed Action would result in a “may affect, not likely to adversely affect” situation for the Mexican Spotted Owl (*Strix occidentalis lucida*).

*Mitigation Measures:*

In order to protect Mexican spotted owl and their habitat the following survey and protection protocols would be put into effect: No surface disturbing activities would be allowed within “good” and “fair” habitat designations until the end of the two survey seasons in accordance with USFWS protocol. If MSO are documented, BLM would consequently follow USFWS protocol for Protected Activity Center (PAC) establishment. With the exception of canyon habitat, well pad construction and drilling would be allowed within the 0.5 mile buffer after the first season of surveys is completed, outside of the timing restriction and only if no owls have been detected. The second season of surveys would still be required for these 0.5 mile buffer areas. If no owls have been detected at the completion of the two seasons of calling surveys, the timing restriction shown in Table 2-5 above would no longer be required for the areas of “good” and “fair” habitat, or the 0.5 mile buffer. However, if more than four years have elapsed between the end of the two seasons of survey and the initiation of any Proposed Action, then another complete inventory would be required prior to any surface disturbing activities.

Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)

The Project Area includes 142 acres of riparian habitat. However, no development is proposed for the White River corridor on either BLM-administered or State-administered public lands. Thus, there would be no direct impact to the yellow-billed cuckoo.

Indirect impacts on the yellow-billed cuckoo could occur as a result of decreased water quality due to increased erosion from surface disturbance or accidental spills. Changes in water quality could in turn, lead to a degradation of riparian vegetation, thereby decreasing
which provides allochthonous input into the river 3) potentially exposing fish species to contaminants from accidental spills/leaks of pipelines or productions facilities, and 4) resulting in a depletion of the Upper Colorado River Basin.

Increased vehicle traffic associated with oil and gas activities has the potential to introduce exotic species to floodplain areas. The spread of exotic plants can alter river channels. Channel width reductions increase water velocities in the main channel and decrease the number of low velocity backwaters.

The White River is a large river with high dilution factors. However, if a spill/leak were to enter this river, contaminants are likely to accumulate in backwater/depressional areas with reduced dilution and less flushing capacity (Woodward et al. 1985). The endangered Colorado River fish use these sites which provide cover and a food source. Water quality is defined by parameters such as temperature, dissolved oxygen, environmental contaminants, nutrients, turbidity, and is considered a primary constituent element of designated critical habitat for the Colorado River fishes. Research is limited regarding threats posed by environmental contaminants to the endangered Colorado River fishes (Woodward et al. 1985; Krahn et al. 1986; Mayer and Ellersieck 1986). However, these studies have shown that contaminants, including petroleum hydrocarbons released via spills/leaks, can affect behavioral functions which have been shown to impair feeding behavior (Woodward et al. 1987). Early life stages of all fish are generally more sensitive to environmental contaminants than juveniles or adults (Mayer and Ellersieck), and disruption of behavioral functions can result in population declines or changes in year-class strength if enough individuals are affected (Little et al. 1993).

Applicant-committed measures to reduce spills/leaks that could enter the White River include: Installation of closed-loop system in drainages or areas of shallow ground water; installation of leak detection devices or self-contained mud systems with the drilling fluids and mud and cuttings being transported to approved disposal areas. In compliance with 40 CFR 112 a Spill Prevention, Control and Countermeasure (SPCC) plan would be developed and implemented as necessary. Any spills would be immediately reported to the BLM and other regulatory agencies as necessary. Indirect impacts on the species could occur from decreased water quality due to increased erosion and sediment yield resulting from surface disturbance and spills; however applicant-committed measures in road and well pad design to improve drainage and reduce sediment would effectively mitigate any impact to juveniles residing in backwater areas.

Activities that utilize water from the Colorado River watershed result in direct and indirect impacts to these species. A total of approximately 208.4 acre-feet of water would be used in relation to the Proposed Action. Over the 4-year construction phase of the project, the annual water use could involve about 51.2 acre-feet per year. The average annual flow in the White River at Asphalt Wash is about 387,426 acre-feet. Therefore, the Proposed Action would deplete the flow in the White River by 0.01 percent. This project-related flow depletion would be negligible from a hydrologic standpoint. However, activities that cause the depletion of water in the Colorado River watershed could result in direct and indirect impacts to these four endangered fish species.

Depletion or the removal of water from the Upper Colorado River Basin reduce the ability of the river to create and maintain the physical habitat (areas inhabited or potentially habitable
c. the amount of pumping would be limited, to the greatest extent possible, during the pre-dawn hours as larval drift studies indicate that this is a period of greatest daily activity.

3. All pump intakes would be screened with ¼" mesh material.

4. Any fish impinged on the intake screen would be reported to the Service (801.975.3330) and the Utah Division of Wildlife Resources:

Northeastern Region
152 East 100 North, Vernal, UT 84078
Phone: (435) 781-9453

Should you have questions, or require additional information, please contact Amy Torres, Wildlife Biologist, at 435-781-4481.

Attachment: Kerr-McGee's Bonanza Field Development Environmental Assessment/Biological Assessment (EA #UT-080-2006-240)
January 30, 2007

Memorandum

To: Field Manager, Vernal Field Office, Bureau of Land Management, Vernal, Utah

From: Utah Field Supervisor, Ecological Services, U.S. Fish and Wildlife Service, West Valley City, Utah

Subject: Formal Consultation for Kerr-McGee's Bonanza Environmental Assessment/Biological Assessment (FA #UT-080-2006-240)

We received your letter of January 24, 2007, requesting concurrence for Kerr-McGee’s Bonanza project proposal (EA #UT-080-2006-240). We’ve been coordinating with the Bureau of Land Management (BLM) on the development of the EA and BA since January 26, 2006. A complete administrative record for this project is on file in our office.

Based on your letter of January 24, 2007, we concur with your “may affect, not likely to adversely affect” determinations for the Uinta Basin hookless cactus, Utah ladies'-tresses, bald eagle, Mexican spotted owl, and yellow-billed cuckoo. In addition, we concur that the proposed project, including mitigation measures, will not jeopardize the establishment of ferrets in the release area. Due primarily to water depletions, your office made the determination of “may affect, likely to adversely affect” for the four Colorado River endangered fish: Colorado pikeminnow, bonytail, humpback chub, and razorback sucker. In accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.), and the Interagency Cooperation Regulations (50 CFR 402), this document transmits the Fish and Wildlife Service’s (Service) biological opinion for these four fish species.

Because water depletions from the Upper Colorado River Basin are a major factor in the decline of the endangered fishes (Colorado pikeminnow, bonytail, humpback chub, and razorback sucker), the Service determined that any depletion will jeopardize their continued existence and will likely contribute to the destruction or adverse modification of their critical habitat (USDI, Fish and Wildlife Service, Region 6 Memorandum, dated July 8, 1997). To address depletions issues, the Department of the Interior; the states of Wyoming, Colorado and Utah; and the
Western Area Power Administration established the Recovery Implementation Program for Endangered Fish Species in 1988. The Recovery Program acts as the reasonable and prudent alternative to avoid jeopardy to the endangered fishes by depletions from the Upper Colorado River Basin.

In order to further define and clarify the process in the Recovery Program, a section 7 agreement was implemented on October 15, 1993, by the Recovery Program participants. Incorporated into this agreement is a Recovery Implementation Program Recovery Action Plan (Plan) which identifies actions currently believed to be required to recover the endangered fishes in the most expeditious manner.

Included in the Recovery Program was the requirement that a depletion fee would be paid to help support the Recovery Program. On July 8, 1997, the Service issued an intra-Service biological opinion determining that the depletion fee for depletions of 100 acre-feet or less are no longer required because the Recovery Program has made sufficient progress to be the reasonable and prudent alternative to avoid the likelihood of jeopardy to the endangered fishes and to avoid destruction or adverse modification of their critical habitat by average annual depletions of 100 acre-feet of less. The average annual water depletion for this project is estimated to be 51.2 acre-feet per year for four years, with the total water use of up to 208.4 acre-feet. Therefore, the depletion fee for this project is waived.

We appreciate your commitment in conserving endangered species. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, these determination may be reconsidered. If further assistance is needed or you have any questions, please contact Bekee Megown, at (801) 975-3330 extension 146.