

## 4.9. MINERALS AND ENERGY RESOURCES

This chapter presents the environmental consequences of mineral and energy exploration and development with regard to the management actions proposed under the Proposed RMP and each of the five alternatives described in Chapter 2.

As described in Chapter 3, Minerals and Energy Resources (Section 3.9) the exploration and development of mineral and energy resources is accomplished through several stages of activity. The first stage (land categorization) involves determining which public lands should be available for exploration and development and under what conditions. The BLM has developed four conditions of leasing to describe the stipulations that would be placed upon BLM-administered public lands regarding their availability for fluid hydrocarbon leasing. All BLM-administered public lands within the VPA are allocated to leasing with one of the following four lease constraints for oil and gas development:

- Open to oil and gas leasing subject to standard lease terms
- Open to oil and gas leasing subject to moderate constraints (TL/CSU)
- Open to oil and gas leasing subject to major constraints (NSO)
- Administratively Closed to oil and gas leasing

In addition to the oil and gas leasing stipulations, locatable and salable minerals areas are generally classified as either open or closed. Locatable minerals are usually the base and precious metal ores, ferrous metal ores, and certain classes of industrial minerals where acquisition is by staking (locating) a mining claim over the deposit and then acquiring the necessary permits to explore or mine. Salable minerals are defined as mineral commodities sold by sales contract from the federal government. Salable minerals are generally common varieties of construction materials and aggregates, such as sand, gravel, cinders, roadbed, and ballast material.

### 4.9.1. IMPACTS COMMON TO THE PROPOSED RMP AND ALL ALTERNATIVES

Essentially, the goals and objectives for mineral and energy development that are common to the Proposed RMP and all alternatives are to help the BLM meet local and national, non-renewable and renewable energy and other public mineral needs, while ensuring a viable, long-term mineral industry and providing reasonable and necessary protections to other resources.

For both non-renewable and renewable alternative energy resources, the following principles would be applied:

1. Encourage and facilitate the development by private industry of public land mineral resources in a manner that satisfies national and local needs and provides for economical and environmentally sound exploration, extraction and reclamation practices.
2. Process applications, permits, operating plans, mineral exchanges, leases, and other use authorizations for public lands in accordance with existing policy and guidance.

3. Monitor salable, locatable, and leasable mineral operations to ensure proper resource recovery and evaluation, production verification, diligence, inspection and enforcement of contract sales, common-use areas, community pits, free-use permits, leases, and prospecting permits.

The plan would recognize and be consistent with the National Energy Policy (National Energy Policy Development Group, 2001) by:

1. Recognizing the need for diversity in obtaining energy supplies
2. Encouraging conservation of sensitive resource values
3. Improving energy distribution opportunities

#### 4.9.1.1. OIL AND GAS RESOURCES

Under the Proposed RMP and Alternatives A, B, C, and E, split-estate lands (federal minerals-Tribal surface) within the Hill Creek Extension of the Uintah and Ouray Indian Reservation would be available for mineral leasing. Approximately 188,500 acres of split-estate lands would be available under Alternatives A, B, C, and E. Approximately 147,329 acres of split-estate lands would be available under the Proposed RMP. The Hill Creek Extension would not be available for leasing without an appropriate plan amendment under Alternative D (No Action). Therefore, the action Alternatives A, B, C and E, and the Proposed RMP would have more acreage available for mineral leasing than Alternative D (No Action), as well as more wells predicted for development. Although the Proposed RMP would have more acreage available for mineral leasing than Alternative D (No Action), it would have slightly less available than Alternatives A, B, C, and E.

Measures would be developed to avoid, minimize, or mitigate adverse environmental impacts that may result from federally authorized mineral lease activities on these split-estate lands. All potential mineral- and energy-related activities would be closely coordinated with the Tribal government to ensure that their concerns are accommodated to the maximum extent possible under existing law and policy.

The impacts of permitting minerals leasing on split-estate lands within the VPA would be beneficial and long-term. Leasing of split-estate lands would lead to the permitting of additional wells, which would in turn, lead to an increase in the domestic supply of oil and/or natural gas and increased royalties to the federal government and the State of Utah. The Ute Tribe would also receive economic benefits from leasing their lands, including rentals or fees from the use of surface permits or other rights-of-way (ROWS).<sup>6</sup>

#### 4.9.1.2. LOCATABLE MINERAL RESOURCES

Locatable mining operations on lands open to mineral entry (as well as on claim locations that predate withdrawal) must be conducted in compliance with the 43 CFR 3809 (surface management) regulations. These regulations require an operator to prevent unnecessary or undue

<sup>6</sup> Please note that there would also be adverse effects to Tribal lands from mineral leasing. These impacts are discussed under individual resource sections and are included as part of the area analysis.

degradation of the land. The three levels of operation under these regulations are casual use, notice, and plan of operation. In general, casual use mining activities only negligibly disturb federal lands and resources, and usually include recreational mining. This level of mining does not require mechanized equipment or explosives, does not require notification of the BLM, and does not require an approved plan of operations, but does require reclamation. Notice-level mining operations are on five acres or less within a mining claim or project area. A notice is submitted by the operator to the BLM that declares the intention of the operator to begin an operation, and this allows the BLM to review the operation for potential resource conflicts and to eliminate the need for federal action. Plan of operation-level mining activities are on more than five acres, with required submission of an operations plan to the BLM. A plan of operations must document in detail all actions that the operator plans to take from exploration through reclamation. For activities other than casual use, the operator is required to submit either a notice or a plan of operations and a reclamation plan.

A plan of operations and a reclamation plan are required where activities involve the surface disturbance of more than 5 acres. The plan of operations must include a description of the proposed activities, route access and construction, reclamation measures, timeframes of non-operation, and a sketch or a map of the area to be disturbed, including all access routes. Notices and plans of operations also require a 100% reclamation financial guarantee bond before work may commence on the ground. An environmental assessment (EA) or an environmental impact statement (EIS) must be prepared by the BLM or the claimant/operator prior to commencement of any surface-disturbing activities. A plan of operations must be approved by the BLM. Operations at the plan level may not commence until the plan is approved.

Five acres or less of surface disturbance usually requires a notice. The notice must describe the proposed activities, the location on the ground, the start-up date, route access and construction, if any, and reclamation measures. Receipt and review of a notice is not a federal action; therefore, there is no requirement for the preparation of an EA or EIS. Approval by BLM is not required for a notice.

There is no requirement for notifying the BLM of casual use activities. Casual use activities are those that cause only negligible disturbance of the public lands and resources. For example, activities that do not involve the use of earthmoving equipment or explosives may be considered casual use.

Certain lands, as defined in 43 CFR 3802.1-1 and 3809.11, always require a plan of operations. A plan of operation would have to be filed for operations conducted in:

- Lands under wilderness review;
- River corridors in the National Wild and Scenic Rivers System and corridors designated for potential addition to the system;
- Designated Areas of Critical Environmental Concern (ACECs);
- Areas designated as "closed" to OHV use (as defined in 43 CFR 8340-5);
- Any lands or waters known to contain federally proposed or listed threatened or endangered species, or their proposed or designated critical habitat.

Mining operations conducted in WSAs are subject to 43 CFR 3802, Exploration and Mining, Wilderness Review Program. The purpose of these regulations is to prevent impairment of the suitability of WSAs for inclusion in the wilderness system and to prevent unnecessary or undue degradation by activities authorized under the mining laws. Mining operations in WSAs usually require approval of a plan of operations.

The filing of plans of operation is generally more laborious than notice-level operations, and the cost of the extraction of locatable mineral resources would be expected to increase in these areas. Given the moderate potential for the occurrence of economical locatable minerals within the planning area and the fact that there is limited development activity anticipated over the next 15 years, requirements for plans of operations would not likely have adverse economic impacts on most mining operators or prevent the development of locatable minerals.

#### **4.9.1.3. MINERAL MATERIALS**

Under the Proposed RMP and alternatives, all existing mineral material sites would be evaluated to determine continued need and ensure that they are accommodating user needs. The Proposed RMP and alternatives would allow applications for contract sale and free-use permits. Common-use areas and community pits would be established by the BLM in "open" areas, unless otherwise encumbered. The impacts of these management decisions would continue to provide mineral materials, a direct and beneficial effect in the long term.

#### **4.9.1.4. ALTERNATIVE ENERGY**

The goals and objectives for alternative energy development have the potential to provide economic benefits, both locally and regionally. Alternative energy development is considered by many to impact the human environment less than traditional, non-renewable forms of energy development. The goals and objectives reflect the economic need for alternative energy development of wind, solar, and geothermal energy. Individual development proposals would be evaluated based on conformance with the other program goals and objectives stated in the RMP. Alternative energy development would enhance the BLM's ability to help meet local and national energy needs, and it would assist in the growth of a practicable, long-term alternative energy industry while providing reasonable and necessary protections to other resources.

Under management common to all, the Proposed RMP and all action alternatives (A, B, C, and E) would recognize the opportunity for alternative energy development and proposals would be evaluated based on conformance with other program goals and objectives stated in the plan. BMPs would be developed. Implementation of these measures would provide for the use of VPA lands for alternative energy and communications uses while meeting the individual and overall resource management goals of the RMP.

### **4.9.2. PROPOSED RMP AND ALTERNATIVE IMPACTS**

The following section describes the number of acres or miles that would be available for mineral development under the Proposed RMP and each alternative, the potential for economical resource development, and the impacts of other resource decisions upon mineral resources in the

VPA. Table 4.9.1 summarizes the number of acres or miles that would be available for energy and mineral development in the VPA under the Proposed RMP and each alternative. The acreages shown for Gilsonite, phosphate, oil shale, and mineral materials are in areas where the mineral resource was determined to have a high or moderate potential for occurrence (BLM 2004e).

The impacts on minerals resource development from fire, forage, lands and realty, livestock and grazing, paleontological resources, rangeland improvements, riparian, wild horses, and woodlands management decisions would be minor or negligible. The impacts of these resources on minerals resources will not be analyzed further.

**Table 4.9.1. Acres or Miles of Land Available to Energy and Mineral Development under All Alternatives**

Resource	Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D No Action	Alternative E
<b>Oil, Gas, and Coal-bed Natural Gas (Acres)</b>						
Standard Stipulations	860,651	983,905	1,113,116	858,619	918,315	818,891
Timing and Controlled Surface Use	779,730	796,955	706,281	768,466	617,715	680,570
No Surface Occupancy	86,789	69,302	42,053	58,670	136,930	47,629
Closed to Leasing	186,917	63,839	52,550	228,246	52,540	367,037
<b>Gilsonite (Miles/Acres)</b>						
Open	172 miles/ 36,846 acres	Same as Proposed RMP	Same as Proposed RMP	Same as Proposed RMP	168 miles/ 36,009 acres	163 miles/ 34,967 acres
<b>Phosphate (Acres)</b>						
Open	76,208	87,724	87,724	63,571	84,600	52,063
<b>Mineral Materials (Acres)</b>						
Open	389,788	415,395	432,953	388,699	387,700	344,682

#### 4.9.2.1. IMPACTS OF MINERAL DECISIONS ON MINERAL RESOURCES

##### 4.9.2.1.1. PROPOSED RMP

##### 4.9.2.1.1.1. Oil, Gas, and Coal Bed Natural Gas (CBNG)

Approximately 860,651 acres would be administratively available for oil and gas leasing (which includes CBNG) with Standard stipulations. Approximately 779,730 acres would be administratively available for oil and gas leasing (which includes CBNG) with Timing Limitations and/or Controlled Surface Use stipulations. Combined, approximately 1,640,381

acres of land would be administratively available for oil and gas leasing (which includes CBNG) with Standard, Timing Limitation, and/or Controlled Surface Use stipulations. This represents a 6.8% increase in the total acreage available for leasing, compared to Alternative D (No Action), and the third highest number of acres of land available for leasing among all of the alternatives.

Oil and gas development is expected to occur within each of the six exploration-and-development areas shown in Table 4.9.2. Coal-bed natural gas development would occur only in the East and West Tavaputs Plateau. The predicted number of wells is based on the Reasonably Foreseeable Development (RFD) described in the Mineral Potential Report for the VPA (BLM 2004e). If the Proposed RMP were implemented, there would be a 7.3% increase in the total number of predicted oil and gas wells, compared to Alternative D (No Action).

**Table 4.9.2. Predicted Oil and Gas Wells within RFD Areas under The Proposed RMP<sup>7</sup>**

Exploration and Development/RFD Area	Percent of Open Area	Predicted Oil Wells	Predicted Gas Wells	Predicted CBNG Wells
Altamont-Bluebell	99.97%	175	250	0
East Tavaputs Plateau	89.69%	67	538	72
Manila-Clay Basin	92.64%	0	42	0
Monument Butte-Red Wash	97.03%	1,650	3,008	0
Tabiona-Ashley Valley	94.94%	28	0	0
West Tavaputs Plateau	95.51%	72	334	48
<b>Total</b>		<b>1,992</b>	<b>4,172</b>	<b>120</b>

The direct impacts of mineral resources decisions on oil, gas and CBNG development would be beneficial. An increase in the potential number of oil and gas wells under the Proposed RMP would lead to an increase in the available supply of oil and/or natural gas. This would have a short-term beneficial socioeconomic impact on the minerals extraction industry and on local economies from increased production, and by maintaining the supply of an energy resource.

The indirect impacts of mineral resources decisions on oil and gas development would be beneficial and adverse. An increase in the potential number of oil and gas wells under the Proposed RMP would lead to an increase in royalties paid to the federal government and/or the State of Utah, as the oil and gas wells were developed and the resource was extracted. However, the increased total acreage that would be open to oil, gas, and CBNG development would also diminish the quantity of finite fossil fuel resources found in the VPA, which would have a long-term adverse impact on the mineral resources extraction industry and on the local economies that support the development and extraction of the resource.

#### 4.9.2.1.1.2. Other Mineral Resources

The impacts of mineral resource decisions on mineral resources other than fluid minerals are described below. Impacts are the same for each resource. Following is a quantitative analysis

<sup>7</sup> Note: Calculations based on all land-type jurisdictions occurring in the VPA (Bureau of Land Management, State of Utah, Tribal, Private, U.S. Fish and Wildlife Service, Bureau of Reclamation, Utah Division of Wildlife Resources, and U.S. Forest Service).

providing a comparison of mineral resources decisions of the Proposed RMP to Alternative D (No Action).

Direct impacts of mineral resources decisions on Gilsonite, phosphate, and mineral materials development would be beneficial. An increase in the total linear miles available for Gilsonite, and the total acreage available for phosphate and mineral materials development would have a short-term, beneficial socioeconomic impact on the minerals industry and the local economies that support the industry resulting from an increase in the amount of mineral resources available for extraction and commercial sale.

Indirect impacts of mineral resources decisions on Gilsonite, phosphate, and mineral materials development would be beneficial and adverse. An increase in the linear miles available for Gilsonite development, and the total acreage available for mineral materials development under the Proposed RMP would lead to an increase in royalties paid to the federal government and/or the State of Utah. An increase in the total linear miles available for Gilsonite, and the total acreage available for mineral materials development would, over time, decrease the amount of the finite mineral resources found in the VPA, producing indirect, long-term, adverse economic impacts. A decrease in the area open to phosphate development would decrease royalties but retain a larger percentage of the remaining supply of phosphate.

### Coal

Coal mining has not occurred on public lands in the VPA due to lack of demand and the poor quality of the deposits. There is a moderate potential for the occurrence of economically mineable coal deposits within the VPA, but it is unlikely that coal exploration or development will occur during the next 15 years due to the low-grade quality of the coal. Therefore, it is unlikely that mineral resource decisions made under this alternative would have impacts, either beneficial or adverse, on coal resources.

### Gilsonite

Approximately 172 miles or 36,846 acres would be open for prospecting, leasing, and development of Gilsonite. Additional, new veins located via field study or prospecting would also be available if they are within lands already categorized as "open" for Gilsonite development. This represents a 2.4% increase in the total miles open for prospecting, leasing, and developing Gilsonite, compared to Alternative D (No Action).

### Phosphate

Approximately 76,208 acres would be open for prospecting, leasing, and development of phosphate within areas known to contain phosphate deposits. This represents a 9.9% decrease in the total acreage open for prospecting, leasing and developing phosphate, compared to Alternative D (No Action).

Mineral Materials

Approximately 389,788 acres would be open for mineral material development. This represents a 0.5% increase in the total number of acres available for development of mineral materials, compared to Alternative D (No Action).

Locatable Minerals

As identified in the Mineral Potential Report (BLM 2004e), there is moderate potential for the occurrence of locatable minerals within the VPA. Very little development activity for locatable minerals is anticipated during the next 15 years; therefore, it is unlikely that mineral resource decisions under this alternative would have an impact, beneficial or adverse, on locatable mineral resources.

**4.9.2.1.2. ALTERNATIVE A****4.9.2.1.2.1. Oil, Gas, and Coal Bed Natural Gas (CBNG)**

Approximately 983,905 acres would be administratively available for oil and gas leasing (which includes CBNG) with Standard stipulations. Approximately 796,955 acres would be administratively available for oil and gas leasing (which includes CBNG) with Timing Limitations and/or Controlled Surface Use stipulations. Combined, approximately 1,780,860 acres of land would be administratively available for oil and gas leasing (which includes CBNG) with Standard, Timing Limitation and/or Controlled Surface Use stipulations. This represents a 15.9% increase in the total acreage available for leasing, compared to Alternative D (No Action), and the second highest number of acres of land available for leasing among all of the alternatives.

Oil and gas development is expected to occur within each of the six exploration-and-development areas shown in Table 4.9.3. Coal-bed natural gas development would occur only in the East and West Tavaputs Plateau. The predicted number of wells is based on the Reasonably Foreseeable Development (RFD) described in the Mineral Potential Report for the VPA (BLM 2004e). If Alternative A were implemented, there would be a 8.3% increase in the total number of predicted oil and gas wells, compared to Alternative D (No Action).

**Table 4.9.3. Predicted Oil and Gas Wells within RFD Areas under Alternative A<sup>8</sup>**

Exploration and Development/RFD Area	Percent of Open Area	Predicted Oil Wells	Predicted Gas Wells	Predicted CBNG Wells
Altamont-Bluebell	99.97%	175	250	0
East Tavaputs Plateau	94.96%	71	570	76
Manila-Clay Basin	97.86%	0	44	0
Monument Butte-Red Wash	96.59%	1,655	3,018	0
Tabiona-Ashley Valley	96.26%	29	0	0

<sup>8</sup> Note: Calculations based on all land-type jurisdictions occurring in the VPA (Bureau of Land Management, State of Utah, Tribal, Private, U.S. Fish and Wildlife Service, Bureau of Reclamation, Utah Division of Wildlife Resources, and U.S. Forest Service).

**Table 4.9.3. Predicted Oil and Gas Wells within RFD Areas under Alternative A<sup>8</sup>**

Exploration and Development/RFD Area	Percent of Open Area	Predicted Oil Wells	Predicted Gas Wells	Predicted CBNG Wells
West Tavaputs Plateau	95.53%	72	334	48
<b>Total</b>		<b>2,002</b>	<b>4,216</b>	<b>124</b>

The direct impacts of mineral resources decisions on oil, gas and CBNG development would be beneficial. An increase in the potential number of oil and gas wells under Alternative A would lead to an increase in the available supply of oil and/or natural gas. This would have a short-term beneficial socioeconomic impact on the minerals extraction industry and on local economies from increased production, and by maintaining the supply of an energy resource.

The indirect impacts of mineral resources decisions on oil and gas development would be beneficial and adverse. An increase in the potential number of oil and gas wells under Alternative A would lead to an increase in royalties paid to the federal government and/or the State of Utah, as the oil and gas wells were developed and the resource was extracted. However, the increased total acreage that would be open to oil, gas, and CBNG development would also diminish the quantity of finite fossil fuel resources found in the VPA, which would have a long-term adverse impact on the mineral resources extraction industry and on the local economies that support the development and extraction of the resource.

#### 4.9.2.1.2.2. Other Mineral Resources

The impacts of mineral resource decisions on mineral resources other than fluid minerals are described below. Impacts are the same for each resource. Following is a quantitative analysis providing a comparison of mineral resources decisions of Alternative A to Alternative D (No Action).

Direct impacts of mineral resources decisions on Gilsonite, phosphate, and mineral materials development would be beneficial. An increase in the total linear miles available for Gilsonite and acres available for phosphate and mineral materials development would have a short-term, beneficial socioeconomic impact on the minerals industry and the local economies that support the industry resulting from an increase in the amount of mineral resources available for extraction and commercial sale.

Indirect impacts of mineral resources decisions on Gilsonite, phosphate, and mineral materials development would be beneficial and adverse. An increase in the linear miles available for Gilsonite development, and the total acreage available for phosphate and mineral materials development under Alternative A would lead to an increase in royalties paid to the federal government and/or the State of Utah. An increase in the total linear miles available for Gilsonite, and the total acreage available for phosphate and mineral materials development would, over time, decrease the amount of the finite mineral resources found in the VPA, producing indirect, long-term, adverse economic impacts.

### Coal

Coal mining has not occurred on public lands in the VPA due to lack of demand and the poor quality of the deposits. There is a moderate potential for the occurrence of economically mineable coal deposits within the VPA, but it is unlikely that coal exploration or development will occur during the next 15 years due to the low-grade quality of the coal. Therefore, it is unlikely that mineral resource decisions made under this alternative would have impacts, either beneficial or adverse, on coal resources.

### Gilsonite

Approximately 172 miles or 36,846 acres would be open for prospecting, leasing, and development of Gilsonite. Additional, new veins located via field study or prospecting would also be available if they are within lands already categorized as "open" for Gilsonite development. This represents a 2.4% increase in the total miles open for prospecting, leasing, and developing Gilsonite, compared to Alternative D (No Action).

### Phosphate

Approximately 87,724 acres would be open for prospecting, leasing, and development of phosphate within areas known to contain phosphate deposits. This represents a 3.7% increase in the total acreage open for prospecting, leasing and developing phosphate, compared to Alternative D (No Action).

### Mineral Materials

Approximately 415,395 acres would be open for mineral material development. This represents a 7.1% increase in the total number of acres available for development of mineral materials, compared to Alternative D (No Action).

### Locatable Minerals

As identified in the Mineral Potential Report (BLM 2004e), there is moderate potential for the occurrence of locatable minerals within the VPA. Very little development activity for locatable minerals is anticipated during the next 15 years; therefore, it is unlikely that mineral resource decisions under this alternative would have an impact, beneficial or adverse, on locatable mineral resources.

## **4.9.2.1.3. ALTERNATIVE B**

### **4.9.2.1.3.1. Oil, Gas, and Coal Bed Natural Gas (CBNG)**

Approximately 1,113,116 acres would be administratively available for oil and gas leasing (which includes CBNG) with Standard Stipulations. Approximately 706,281 acres would be administratively available for oil and gas leasing (which includes CBNG) with Timing Limitations and/or Controlled Surface Use stipulations. Combined, approximately 1,819,397 acres of land would be administratively available for oil and gas leasing (which includes CBNG) with standard, Timing Limitations, and/or Controlled Surface Use stipulations. This represents

an 18.4% increase in the total acreage available for leasing and potential number of wells, compared to Alternative D (No Action), and the highest number of acres of land available for leasing among all of the alternatives.

Oil and gas development is expected to occur within each of the six exploration-and-development areas shown in Table 4.9.4. Coal-bed natural gas development would occur only in the East and West Tavaputs Plateau. The predicted number of wells is based on the Reasonably Foreseeable Development (RFD) outlined in the Mineral Potential Report for the VPA (BLM 2004e). If Alternative B were implemented, there would be a 9.1% increase in the total number of predicted oil and gas wells, compared to Alternative D (No Action). It should be noted, as mentioned above in Section 4.9.1.1, that Alternative D (No Action) would not include the additional acreage within the Hill Creek Extension analyzed under the action alternatives, so the RFD predictions of oil and gas development would seem to be less than predicted under the action alternatives.

**Table 4.9.4. Predicted Oil and Gas Wells within RFD Areas under Alternative B<sup>9</sup>**

Exploration and Development/RFD Area	Percent of Open Area	Predicted Oil Wells	Predicted Gas Wells	Predicted CBNG Wells
Altamont-Bluebell	99.97	175	250	0
East Tavaputs Plateau	95.19	71	571	76
Manila-Clay Basin	97.98	0	44	0
Monument Butte-Red Wash	97.93	1665	3036	0
Tabiona-Ashley Valley	96.69	29	0	0
West Tavaputs Plateau	99.65	75	349	50
<b>Total</b>		<b>2,015</b>	<b>4,250</b>	<b>126</b>

The direct and indirect impacts of minerals decisions under Alternative B for oil, gas, and CBNG development would be similar to those described under Alternative A, though more wells would be drill under Alternative B (6,391) than Alternative A (6,342).

#### 4.9.2.1.3.2. Other Mineral Resources

The direct and indirect impacts on Gilsonite, phosphate, and mineral materials resources under Alternative B would be similar to the impacts described under Alternative A. Following is a quantitative analysis providing a comparison of mineral resources decisions of Alternative A to Alternative D (No Action).

<sup>9</sup> Note: Calculations based on all land-type jurisdictions occurring in the VPA (Bureau of Land Management, State of Utah, Tribal, Private, U.S. Fish and Wildlife Service, Bureau of Reclamation, Utah Division of Wildlife Resources, and U.S. Forest Service).

### Coal

The impacts on coal resources under Alternative B would be similar to those described for Alternative A.

### Gilsonite

Approximately 172 miles or 36,846 acres would be open for prospecting, leasing, and development of Gilsonite. This represents a 2.4% increase in the total miles open for prospecting, leasing, and developing Gilsonite, compared to Alternative D (No Action).

### Phosphate

Approximately 87,724 acres would be open for prospecting, leasing, and development of phosphate within areas known to contain phosphate deposits. This represents a 3.7% increase in the total acreage open for prospecting, leasing, and developing phosphate, compared to Alternative D (No Action).

### Mineral Materials

Approximately 432,953 acres would be available for mineral material development. This represents a 11.7% increase in the total acreage available for development of mineral materials, compared to Alternative D (No Action).

### Locatable Minerals

The impacts on locatable resources under Alternative B would be similar to the impacts described under Alternative A.

#### **4.9.2.1.4. ALTERNATIVE C**

##### **4.9.2.1.4.1. Oil, Gas, and Coal Bed Natural Gas (CBNG)**

Approximately 858,619 acres would be administratively available for oil and gas leasing (which includes CBNG) with Standard Stipulations. Approximately 768,466 acres would be administratively available for oil and gas leasing (which includes CBNG) with Timing Limitations and/or Controlled Surface Use stipulations. Combined, approximately 1,627,085 acres of land would be administratively available for oil and gas leasing (which includes CBNG) with Standard, Timing Limitations, and/or Controlled Surface Use stipulations. This represents a 5.9% increase in the total acreage available for leasing and potential number of wells, compared to Alternative D (No Action). The Proposed RMP and Alternatives A, B, and C would increase the number of acres available for oil and gas leasing (which includes CBNG) compared to Alternative D (No Action). Alternative E would be less than the other alternatives and have the least oil and gas development of the Proposed RMP and all of the action alternatives (see below).

Oil and gas development is expected to occur within each of the six exploration-and-development areas shown in Table 4.9.5. CBNG development would occur only in the East and West Tavaputs Plateau. The predicted number of wells is tied to the RFD outlined in the Mineral Potential Report

(BLM 2004e). If Alternative C were implemented, there would be a 6.3% increase in the total number of predicted oil and gas wells, compared to Alternative D (No Action).

**Table 4.9.5. Predicted Oil and Gas Wells within RFD Areas under Alternative C**<sup>10</sup>

Exploration and Development/RFD Area	Percent of Open Area	Predicted Oil Wells	Predicted Gas Wells	Predicted CBNG Wells
Altamont-Bluebell	99.97	175	250	0
East Tavaputs Plateau	85.18	64	511	68
Manila-Clay Basin	97.80	0	44	0
Monument Butte-Red Wash	96.51	1,641	2,992	0
Tabiona-Ashley Valley	93.93	28	0	0
West Tavaputs Plateau	95.17	71	333	48
<b>Total</b>		<b>1,979</b>	<b>4,130</b>	<b>116</b>

The direct and indirect impacts of minerals decisions under Alternative C for oil, gas, and CBNG development would be similar to those described under Alternative A, though somewhat fewer wells would be drilled and placed into production under Alternative C (6,225) than Alternative A (6,342).

#### 4.9.2.1.4.2. Other Mineral Resources

The direct and indirect impacts on Gilsonite, and mineral materials resources under Alternative C would be similar to the impacts described under Alternative A. The miles of Gilsonite available for production under this alternative would be the same as Alternative A but acres of mineral material available for development under Alternative C would be less than that under Alternatives A, and D (No Action). Following is a quantitative analysis providing a comparison of mineral resources decisions of Alternative C to Alternative D (No Action).

Direct impacts of mineral resources decisions on phosphate development would be adverse. A decrease in the total acreage available for phosphate development under Alternative C (compared to Alternative D, No Action) would result in a decrease in the amount of phosphate available for mining and commercial sale, which would have a long-term, adverse economic impact on the phosphate mining industry in the VPA. However, a decrease in the total acreage available for phosphate development would also prolong the availability of finite phosphate resources found in the VPA for future use, which would reduce the long-term adverse impacts on the phosphate mining industry by ensuring that the resource was available to support a viable, long-term phosphate industry. Indirect impacts of mineral resources decisions on phosphate development would be economically adverse in the long-term. A reduction in the acreage available for phosphate development under Alternative C (when compared to Alternative D) would lead to a decrease in the royalties paid to the federal government and/or the State of Utah.

<sup>10</sup> Note: Calculations based on all land-type jurisdictions occurring in the VPA (Bureau of Land Management, State of Utah, Tribal, Private, U.S. Fish and Wildlife Service, Bureau of Reclamation, Utah Division of Wildlife Resources, and U.S. Forest Service).

### Coal

The direct and indirect impacts on coal resources under Alternative C would be similar to the impacts described for coal under Alternative A.

### Gilsonite

The direct and indirect impacts on Gilsonite resources under Alternative C would be the same as described for Alternative A.

### Phosphate

Approximately 63,571 acres would be open for prospecting, leasing, and development of phosphate within areas known to contain phosphate deposits. This represents a 24.9% decrease in the total acreage open for prospecting, leasing, and developing phosphate, compared to Alternative D (No Action).

### Mineral Materials

Approximately 388,699 acres would be available for mineral material development. This represents a 0.3% increase in the total acreage available for development of mineral materials, compared to Alternative D (No Action).

### Locatable Minerals

The impacts on locatable resources under Alternative C would be the same as described under Alternative A.

#### **4.9.2.1.5. ALTERNATIVE D (NO ACTION)**

##### **4.9.2.1.5.1. Oil, Gas, and Coal Bed Natural Gas (CBNG)**

Approximately 918,315 acres would be available for oil and gas lease under Standard leasing stipulations. Approximately 617,715 acres would be managed with special mitigating measures required to protect various renewable resource values. In total, approximately 1,536,030 acres of land would be administratively available for oil and gas leasing (which includes CBNG) under Standard, Timing Limitation and/or Controlled Surface Use lease stipulations.

Oil and gas development would be expected to occur within each of the six development areas shown in Table 4.9.6. The predicted number of wells for these areas is based on estimates of RFD outlined in the Mineral Potential Report. Under this alternative the federal government and/or the State of Utah would continue to receive royalties from the production and sale of oil and gas. Continued oil and gas extraction would also, over time, reduce the quantities of finite, non-renewable fossil fuel resources found in the VPA.

**Table 4.9.6. Predicted Oil and Gas Wells within RFD Areas under Alternative D (No Action)**

Exploration and Development/RFD Area	Percent of Open Area	Predicted Oil Wells	Predicted Gas Wells	Predicted CBNG Wells
Altamont-Bluebell	99.94	175	250	0
East Tavaputs Plateau	80.84	61	485	64
Manila-Clay Basin	95.20	0	43	0
Monument Butte-Red Wash	89.52	1,522	2,775	0
Tabiona-Ashley Valley	95.30	29	0	0
West Tavaputs Plateau	95.16	71	333	48
<b>Total</b>		<b>1,858</b>	<b>3,886</b>	<b>112</b>

**4.9.2.1.5.2. Other Mineral Resources**

The direct and indirect impacts on Gilsonite, phosphate, and mineral materials resources under Alternative D (No Action) would be similar to the impacts described under Alternative A.

Coal

The impacts on coal resources under Alternative D (No Action) would be similar to those described for Alternative A.

Gilsonite

Approximately 168 miles (36,009 acres) would be open for prospecting, leasing, and development of Gilsonite. Restrictions placed on a lease or subsequent conditions of approval do not apply to maintenance and production of existing facilities. Restrictions from other resource decisions would be applied to new leases, or at the time of lease renewal, for existing leases. Exploration and development of Gilsonite within crucial deer and elk winter range would be allowed year-round but would require management actions designed to mitigate both short- and long-term loss of habitat.

Phosphate

Approximately 84,600 acres would be open for prospecting, leasing, and development of phosphate within areas known to contain phosphate deposits. The impacts on phosphate resources would be similar to those described for Alternative A.

Mineral Materials

Approximately 387,700 acres would be available for mineral material development. The impacts on mineral materials would be similar to those described for Alternative A.

Locatable Minerals

The impacts on locatable resources under Alternative D (No Action) would be similar to the impacts described under Alternative A.

**4.9.2.1.6. ALTERNATIVE E****4.9.2.1.6.1. Oil, Gas, and Coal Bed Natural Gas (CBNG)**

Approximately 818,891 acres would be administratively available for oil and gas leasing (which includes CBNG) with Standard stipulations. Approximately 680,570 acres would be administratively available for oil and gas leasing (which includes CBNG) with Timing Limitations and/or Controlled Surface Use stipulations. Combined, approximately 1,499,461 acres of land would be administratively available for oil and gas leasing (which includes CBNG) with Standard, Timing Limitations, and/or Controlled Surface Use stipulations. This represents a 2.4% decrease in the total acreage available for leasing and potential number of wells, compared to Alternative D (No Action). Thus, Alternative E would have the least land available for oil and gas development of all of the alternatives.

Under Alternative E, approximately 277,597 acres within non-WSA areas with wilderness characteristics would be closed to oil and gas leasing and closed to disposal of mineral materials, in order to protect the wilderness characteristics of these areas. This would have long-term, adverse impacts on minerals development and extraction because these areas would be closed to minerals-related surface disturbances. However, the Hill Creek Extension would be open to leasing, as described above.

Under this alternative, oil and gas development is expected to occur within each of the six exploration-and-development areas shown in Table 4.9.7. CBNG development would occur only in the East and West Tavaputs Plateaus, with the predicted number of wells linked to the RFD discussed in the Mineral Potential Report. If Alternative E were implemented, there would be a 4.5% increase in the total number of predicted oil and gas wells, compared to Alternative D (No Action).

**Table 4.9.7. Predicted Oil and Gas Wells within RFD Areas under Alternative E<sup>11</sup>**

Exploration and Development/RFD Area	Percent of Open Area	Predicted Oil Wells	Predicted Gas Wells	Predicted CBNG Wells
Altamont-Bluebell	99.96%	175	250	0
East Tavaputs Plateau	83.17%	62	499	67
Manila-Clay Basin	91.03%	0	41	0
Monument Butte-Red Wash	95.08%	1616	2948	0
Tabiona-Ashley Valley	91.80%	28	0	0
West Tavaputs Plateau	91.00%	68	318	45
<b>Total</b>		<b>1949</b>	<b>4056</b>	<b>112</b>

<sup>11</sup> Note: Calculations based on all land-type jurisdictions occurring in the VPA (Bureau of Land Management, State of Utah, Tribal, Private, U.S. Fish and Wildlife Service, Bureau of Reclamation, Utah Division of Wildlife Resources, and U.S. Forest Service).

While the fewest number of acres would be available for oil and gas production under Alternative E, the direct and indirect impacts of minerals decisions would be similar to those described under Alternative A, though somewhat fewer wells would be drilled and placed into production under Alternative E (6,117) than Alternative A (6,342).

#### 4.9.2.1.6.2. Other Mineral Resources

The direct and indirect impacts on Gilsonite, other leaseable minerals, mineral materials and locatable minerals under Alternative E would be of the same nature as the impacts described under Alternative A. Following is a quantitative analysis providing a comparison of mineral resources decision under Alternative E to Alternative D (No Action).

##### Coal

The direct and indirect impacts on coal resources under Alternative E would be similar to the impacts described for coal under Alternative A.

##### Gilsonite

Approximately 163 miles (34,967 acres) would be available for prospecting, leasing, and development of Gilsonite. Additional, new veins located via field study or prospecting would also be available if they are within lands already categorized as "open" for Gilsonite development. This represents a 2.9% decrease in the total miles open for prospecting, leasing, and developing Gilsonite, as compared to Alternative D (No Action).

##### Phosphate

Approximately 52,063 acres would be open for prospecting, leasing, and development of phosphate within areas known to contain phosphate deposits. This represents a 38.5% decrease in the total acreage open for prospecting, leasing, and developing phosphate, compared to Alternative D (No Action).

Direct impacts of mineral resources decisions on phosphate development would be adverse. A decrease in the total acreage available for phosphate development under Alternative E (compared to Alternative D, No Action) would result in a decrease in the amount of phosphate available for mining and commercial sale, which would have a long-term, adverse economic impact on the phosphate mining industry in the VPA. However, a decrease in the total acreage available for phosphate development would also prolong the availability of finite phosphate resources found in the VPA for future use, which would reduce the long-term adverse impacts on the phosphate industry by ensuring that the resource was available to support a viable, long-term industry. Indirect impacts of mineral resources decisions on phosphate development would be economically adverse in the long-term. A reduction in the acreage available for phosphate development under Alternative E (when compared to Alternative D, No Action) would lead to a decrease in the royalties paid to the federal government and/or the State of Utah.

### Mineral Materials

Approximately 344,682 acres would be available for mineral material development. This represents an 11.1% decrease in the total acreage available for development of mineral materials, compared to Alternative D (No Action).

### Locatable Minerals

The impacts on locatable resources under Alternative E would be similar to the impacts described under Alternative A.

## **4.9.2.2. IMPACTS OF CULTURAL RESOURCE DECISIONS ON MINERAL RESOURCES**

### **4.9.2.2.1. PROPOSED RMP AND ALTERNATIVE A**

Cultural resource decisions under Alternative A would restrict oil and gas leasing on 48,801 acres of land in the Uinta Foothills, Little/Devil's Hole, Upper Willow Creek and Four Mile Wash areas. Oil and gas leasing within these areas would have Timing Limitations and/or Controlled Surface Use stipulations and/or No Surface Occupancy stipulations. The 48,801 acres in these two leasing categories is included in the total number of acres available for oil and gas leasing (Table 4.9.1).

Cultural resource decisions under Alternative A would have long-term, indirect, adverse impacts to mineral resources. Impacts include increasing the costs associated with mineral exploration, extraction, and development, which would have economically adverse impacts on the mineral materials industry in the VPA. Increased costs are associated with directionally drilling for sub-surface resources in NSO areas, the re-routing of access routes and pipelines, and re-locating well pads.

### **4.9.2.2.2. ALTERNATIVE B**

The impacts on mineral resources under Alternative B would be similar to the impacts described under Alternative A, except that leasing in the Four Mile Wash area would be open subject to Standard stipulations, reducing restrictions on oil and gas exploration and development.

### **4.9.2.2.3. ALTERNATIVE C**

Cultural resource decisions under Alternative C would close lands in the Uinta Foothills, Little/Devil's Hole, and Four Mile Wash areas to protect cultural resources. Lands in Willow Creek would be open to leasing subject to Timing and Controlled Surface Use stipulations.

Under this alternative, only the Willow Creek area would be available for oil and gas exploration and development, and stipulations to protect cultural resources would have long-term, indirect, adverse impacts to mineral resources. Impacts include increasing the costs associated with mineral exploration, extraction, and development, which would have economically adverse impacts on the mineral materials industry in the VPA. Increased costs are associated with

measures needed to protect cultural resources including re-routing access routes and pipelines, and re-locating well pads.

#### 4.9.2.2.4. ALTERNATIVE D (NO ACTION)

Cultural resource decisions under Alternative D (No Action) would leave all 48,801 acres of land open to oil and gas leasing in the Uinta Foothills, Little/Devil's Hole, Upper Willow Creek and Four Mile Wash areas. The 48,801 acres in this leasing category is included in the total number of acres available for oil and gas leasing (Table 4.9.1).

Impacts include a decrease in the costs associated with mineral exploration, extraction and development and possibly increasing the pace at which mineral resources would be developed. Fewer restrictions would allow direct, planned placement of access routes and pipelines to and from wells; thus, in many cases, the time required to develop oil, gas and CBNG wells would be reduced.

#### 4.9.2.2.5. ALTERNATIVE E

The impacts of cultural resource decisions on minerals and energy resources would be the same as described for Alternative C because the actions are the same.

### 4.9.2.3. IMPACTS OF NON-WSA AREAS WITH WILDERNESS CHARACTERISTICS DECISIONS ON MINERAL RESOURCES

#### 4.9.2.3.1. PROPOSED RMP

The Proposed RMP would manage approximately 106,178 acres of non-WSA areas with wilderness characteristics for the protection of the wilderness values within these areas. Management decisions to protect these values would include closure to oil and gas leasing (except in White River, which would be NSO), closure to solid mineral leasing, and closure to mineral material disposal, closure to cross-country OHV travel, no new road construction, ROW avoidance, and management under VRM Class II objectives. These decisions would reduce the leasing acreage for minerals development within the VPA in the long term, and prevent access road construction within these areas, which would have long-term, adverse impacts on minerals exploration and development within most of the RFD areas.

The following Table 4.9.8 shows the number of acres of non-WSA wilderness characteristics protection under each alternative that would adversely impact minerals resources leasing within each RFD area.

**Table 4.9.8. Acres of Non-WSA Areas with Wilderness Characteristics, by RFD**

Exploration and Development/RFD Area	Proposed RMP	Alternatives A, B, and C	Alternative D (No Action)	Alternative E
Altamont-Bluebell	0	0	0	0
East Tavaputs Plateau	0	0	0	106,785

**Table 4.9.8. Acres of Non-WSA Areas with Wilderness Characteristics, by RFD**

Exploration and Development/RFD Area	Proposed RMP	Alternatives A, B, and C	Alternative D (No Action)	Alternative E
Manila-Clay Basin	12,374	0	0	12,374
Monument Butte-Red Wash	6,705	0	0	27,572
Tabiona-Ashley Valley	87,099	0	0	87,099
West Tavaputs Plateau	0	0	0	43,453
<b>Total</b>	106,178	0	0	277,597

**4.9.2.3.2. ALTERNATIVES A, B, C, AND D (NO ACTION)**

Under these alternatives, non-WSA wilderness characteristics areas would not be managed for protection of their wilderness values, so there would be no restriction on exploration and development of minerals resources.

**4.9.2.3.3. ALTERNATIVE E**

Alternative E would manage approximately 277,596 acres of non-WSA areas with wilderness characteristics for the protection of the wilderness values within these areas. All non-WSA lands with wilderness characteristics would be closed to oil and gas leasing, solid mineral leasing, and disposal of mineral materials. The impacts to mineral resources under Alternative E would be the same as those described for the Proposed RMP, but would occur over a larger area (see Table 4.9.8).

**4.9.2.4. IMPACTS OF RECREATION RESOURCE DECISIONS ON MINERAL RESOURCES****4.9.2.4.1. PROPOSED RMP**

Recreation resource decisions to mitigate noise and light pollution adjacent to Dinosaur National Monument would have long-term, indirect, adverse impacts to mineral resources. Minimizing noise and light pollution would impact development by increasing its costs. However, these costs would be minimal in comparison to total operation and development costs. Recreation resource decisions under this alternative would also lead to decreased opportunities for exploration adjacent to Dinosaur National Monument. In this case, impacts, beneficial or adverse, would be based on mineral potential adjacent to Dinosaur National Monument. It is unlikely that requirements to minimize noise and light pollution would lead to the denial of a proposed project. This decision would impact mineral resources more than Alternative D (No Action), which does not address light pollution and noise mitigation impacts adjacent to the Monument.

The Pelican Lake Special Recreation Management Area (SRMA: 1,014 acres) would be closed to disposal of mineral materials and NSO for oil and gas leasing. These restrictions would be in place for protection of the recreation setting and experience, but increase costs for development of fluid and mineral material resources. Oil and gas could still be produced via directional drilling, but at greater effort and expense.

**4.9.2.4.2. ALTERNATIVE A**

Impacts to mineral resources would be the same as for the Proposed RMP. In addition, 160 acres in the Book Cliffs would be open to oil and gas leasing with an NSO stipulation for the protection of a remnant old growth pinyon pine forest, with similar restriction and limitation on the development of oil and gas resources that would result from the NSO stipulation prescribed in the Pelican Lake SRMA under the Proposed RMP. Further, in the White River SRMA under this alternative, ½ mile either side of the river would also be NSO of oil and gas leasing for the protection of the recreation setting and experience. The effect of NSO in this SRMA would be the same as described above for Pelican Lake SRMA.

**4.9.2.4.3. ALTERNATIVE B**

Impacts to mineral resources would be the same as for Alternative A, but including only the Pelican Lake SRMA prescription and resultant effects on mineral exploration and production.

**4.9.2.4.4. ALTERNATIVE C**

Impacts to mineral resources from the decision to mitigate noise and light would be the same as for Alternatives A and B.

The decision to lease for oil and gas activities with an No Surface Occupancy stipulation within 0.5 mile of Dinosaur National Monument would have a long-term direct and indirect, adverse impact to mineral development, in an indirect relationship with the potential for minerals in those areas. Impacts include an increase in development costs associated with directional drilling operations. The recreation resource decisions under this alternative are substantially more restrictive to mineral and energy resources development than alternatives A and B, but less than Alternative E (see below).

The effect of management of the Pelican Lake SRMA on mineral development would be the same as described for Alternative A.

**4.9.2.4.5. ALTERNATIVE D (NO ACTION)**

Recreation resource decisions regarding noise and light pollution to Dinosaur National Monument are not specified under this alternative, and would place no restrictions on minerals or energy development. Impacts to mineral resources would be long-term direct/indirect, and beneficial. Impacts would include an increase in the potential number of wells permitted, increased domestic supply of oil and natural gas, and increased royalties to the federal government and the State of Utah. Impacts would be based on mineral potential adjacent to the Monument.

The management prescription for Pelican Lake SRMA would have the same effect on development of mineral and energy resources as described under Alternative A.

**4.9.2.4.6. ALTERNATIVE E**

The impacts of recreation decisions on minerals would be similar to those discussed under Alternative C because the management decisions are similar, except that under this alternative non-WSA areas with wilderness characteristics would be closed to mineral leasing, further restricting mineral development. Under this alternative, approximately 277,596 acres of non-WSA wilderness characteristics areas would be managed to provide opportunities for primitive recreation activities and focus management on non-motorized recreation uses, and therefore would be more restrictive of mineral development. Compared to Alternative D (No Action), this alternative would have more adverse impacts on minerals resources because more areas within the VPA would be closed to minerals leasing than under Alternative D (No Action).

**4.9.2.5. IMPACTS OF SOIL RESOURCES DECISIONS ON MINERAL RESOURCES****4.9.2.5.1. PROPOSED RMP AND ALTERNATIVE A**

Soils resource decisions that require an approved erosion control strategy (surveyed and designed by a certified engineer and approved by the BLM) prior to construction and maintenance on slopes 21-40% would be a long-term, indirect, economically adverse impact on the mineral resources industry by potentially increasing the costs of mineral exploration, extraction, and development associated with these requirements when compared to Alternative D (No Action).

Soils resource decisions that do not allow surface disturbance on slopes greater than 40% (unless it is determined that it would cause undue or unnecessary degradation to pursue other placement alternatives (if available)) would be a long-term direct, economically adverse impact on the mineral resources industry. Adverse impacts would include a potential decrease in the number of wells or other mineral developments permitted, which in turn would lead to decreased royalties to the federal government and/or the State of Utah, and a potential loss of revenue for minerals operators.

The Proposed RMP and Alternative A would impact mineral resources less than Alternative D (No Action), which would allow No Surface Occupancy or other minerals-related surface disturbances on slopes in excess of 40%.

**4.9.2.5.2. ALTERNATIVE B**

Soils resource decisions under Alternative B that require an approved erosion control strategy (surveyed and designed by a certified engineer and approved by the BLM) prior to construction and maintenance on slopes greater than 20% would be a long-term, indirect, adverse impact to mineral resources. Impacts include potential increased costs of mineral exploration, extraction, and development.

This decision would impact mineral resources less than current management, which allows No Surface Occupancy or other surface disturbance on slopes in excess of 40%.

**4.9.2.5.3. ALTERNATIVE C**

Soil resource decisions under Alternative C would be similar to those for the Proposed RMP and Alternative A.

**4.9.2.5.4. ALTERNATIVE D (NO ACTION)**

Soils resource decisions that prohibit surface disturbance on slopes greater than 40% would be a long-term, indirect, adverse impact to mineral resources. Impacts include increasing the costs associated with mineral exploration, extraction, and development.

**4.9.2.5.5. ALTERNATIVE E**

The impacts on minerals resources would be the same as discussed under Alternative C because the management decisions would be the same.

**4.9.2.6. IMPACTS OF SPECIAL DESIGNATIONS DECISIONS ON MINERAL RESOURCES**

Special designations could adversely impact the level of mineral leasing and minerals development and extraction within these areas because of the need to protect the identified values by prohibiting or limiting surface disturbances.

Oil and gas leasing under Standard stipulations would not impact mineral resources as this allows for maximum development. Oil and gas leasing under Timing and Controlled Surface Use is restrictive and could limit mineral development during certain time periods or in identified areas. No Surface Occupancy (NSO) precludes development within an area except for the outermost perimeter because, although NSO allows for directional drilling, generally, current technology can only laterally penetrate about 2,000–3,000 feet of substrate. So, for larger areas, NSO effectively precludes most mineral development because areas beyond the 2,000-3,000 foot limit would be inaccessible. Areas closed to mineral leasing would prohibit all minerals-related surface disturbances.

**4.9.2.6.1. AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACECs)**

The following Table 4.9.9 shows the number of acres under NSO and Closed leasing categories within the proposed ACECs for each alternative. (There are additional acres within these ACECs that are open to leasing with standard terms and conditions and moderate constraints; these acreages are not shown in the table below.)

**Table 4.9.9. Minerals Leasing NSO and Closed Restrictions within Proposed ACECs, by Acres and Alternative**

ACEC	Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D (No Action)	Alternative E
Bitter Creek	0	560	0	58,203	Unspecified	59,628
Browns Park	15,202	24,411	8,992	24,411	31,725	41,144

**Table 4.9.9. Minerals Leasing NSO and Closed Restrictions within Proposed ACECs, by Acres and Alternative**

ACEC	Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D (No Action)	Alternative E
Coyote Basin	0	99	110	5,325	Unspecified	5,325
Four Mile Wash	0	0	0	50,280	Unspecified	50,280
Lower Green River - Lower Corridor	8,394	8,470	0	8,470	8,394	8,470
Green River - Lower Expansion	0	1,700	0	1,700	0	1,700
Middle Green River -	0	0	0	0	Unspecified	0
Lears Canyon	1,375	1,375	1,375	1,375	1,375	1,375
Main Canyon	0	0	0	57,392	Unspecified	57,392
Nine Mile Canyon	17,198	20,487	7,848	11,433	7,848	22,372
Pariette Wetlands	10,437	10,437	10,437	10,437	10,437	10,437
Red Creek Watershed	364	364	364	364	2,540	5,217
Red Mountain-Dry Fork	1,988	24,285	24,285	24,285	24,285	24,285
White River Corridor	0*	8,993	0*	13,273	Unspecified	24,024
<b>Total</b>	<b>54,958</b>	<b>101,181</b>	<b>53,411</b>	<b>266,948</b>	<b>86,604</b>	<b>311,649</b>

\*Excluding areas currently managed as NSO within line of sight or up to one-half mile from the centerline of the river, whichever is less.

#### 4.9.2.6.2. WILD AND SCENIC RIVERS

Table 4.9.10 shows the number of miles of river recommended suitable for inclusion in the NWSRS for each river and for each alternative. The table also displays the classification of the river.

**Table 4.9.10. River Segments That Would Be Determined Suitable and Total River Miles by Alternative**

River/River Segment	Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D <sup>1</sup> (No Action)	Alternative E
White River – Segment 1; "Scenic"	0	24	0	24	0	0 <sup>2</sup>
White River – Segment 2; 'Wild'	0	10	0	10	0	10
White River – Segment 3; "Scenic"	0	0	0	10	0	10
Nine Mile Creek – Segment A; "Scenic"	0	0	0	13	0	13
Nine Mile Creek – Segment B; "Recreational"	0	0	0	6	0	6
Upper Green River; "Scenic"	22	22	22	22	22	22
Lower Green River; "Scenic"	30	30	30	30	30	30
Middle Green River; "Recreational"	0	0	0	36	0	36
Evacuation Creek; "Scenic"	0	0	0	21	0	21
Bitter Creek; "Scenic"	0	0	0	22	0	22
Argyle Creek; "Recreational"	0	0	0	22	0	22
<b>Total River Miles</b>	<b>52</b>	<b>86</b>	<b>52</b>	<b>216</b>	<b>52</b>	<b>192</b>
<b>Total BLM Shoreline Miles</b>	<b>39</b>	<b>57</b>	<b>39</b>	<b>112</b>	<b>39</b>	<b>104</b>

<sup>1</sup>In addition, 87 miles of river involving the White River (Segments 1, 2, and 3), Evacuation Creek, and Bitter Creek would remain eligible with this alternative.

<sup>2</sup>Alternative E would not recommend Segment 1 suitable, but would manage and protect the segment as eligible pending completion of a review of the permit for dam construction.

Note: Mileage is approximate.

Under a "Wild" classification, river corridors would be closed to new mineral leases and mineral entry (claim staking) to protect the free-flowing river, its outstandingly remarkable values, and the river classification (wild). These closures would prevent further exploration and development of mineral and energy resources. If any existing claims or leases exist within a designated river corridor, they would be managed to minimize impacts to the wild and scenic river resource, while allowing the operation to occur consistent with laws and regulations. Under a "Scenic" river classification, new mining claims and mineral leases can be allowed. Mining would be

regulated under the 43 CFR 3809 regulations to minimize impacts to river values as the operation develops. This classification would not prohibit mineral and energy development, but likely impose restrictions for the protection of wild and scenic river values. With a "Recreational" river classification, new mining claims and mineral leases are allowed. Under all classes, new and existing claims and leases would be mitigated to reduce impacts to the free-flowing nature of the rivers, their outstandingly remarkable values, and their classifications.

#### **4.9.2.6.3. WILDERNESS STUDY AREAS (WSAs)**

Under the Proposed RMP and all alternatives, all 53,058 acres in the six existing WSAs would be closed to fluid mineral leasing, solid mineral leasing, and mineral material sales, subject to valid existing rights. Locatable mineral entry would be managed under the 43 CFR 3802 regulations to prevent impairment of the wilderness values of the WSAs. These decisions would prevent entry and development of mineral and energy resources, except on 13,832 acres of the Winter Ridge WSA where valid existing leases would still be developed.

#### **4.9.2.7. IMPACTS OF SPECIAL STATUS SPECIES RESOURCE DECISIONS ON MINERAL RESOURCES**

The Proposed RMP and all alternatives require some degree of spatial or temporal limitations on many surface-disturbing activities, in order to protect sensitive species and their important habitats. In the case of mineral and energy development, specific conditions of approval or lease terms are often required in order to mitigate the adverse affects of development activities on special status species. In order to quantify the overall effect of spatial and temporal limitations on energy and mineral development, an accessibility analysis is located at the end of this chapter that graphically depicts the cumulative effect of spatial and temporal limitations on accessibility to mineral and energy development by industry. Not all spatial and temporal limitations would apply to every lease; it would be very rare for any one lease to have so many limitations as to render it inaccessible for energy development.

Spatial and temporal limitations would have an adverse impact on minerals and energy development by increasing exploration costs, but the degree and magnitude of such an increase depends on several factors. In most cases the economic costs associated with mineral and energy development would not increase substantially as a result of spatial and temporal limitations. Because most of the VPA available to mineral and energy development is currently leased (approximately 70% of available areas), few operators would likely realize increased exploration costs due to spatial and temporal limitations. Even though an operator may temporarily have to refrain from development in one area of the lease because of spatial and temporal restrictions, opportunities to drill other portions of the lease may still be available. In the case of numerous overlapping stipulations, the timeframe in which drilling operation can occur given constraints (drilling window) may be very limited, which could cause adverse economic impacts. But if the drilling window were very broad, then adverse economic impacts would be relatively minor in terms of the total number of operators potentially impacted. Operators have complied with spatial and temporal restrictions and over the years have developed strategies to minimize the economic risks associated with development.

Overall, it is estimated that a small number of operators would experience adverse economic effects if drilling operations must be stayed during special status species protection periods or if drilling operation must be moved to another area on the lease. Lease stipulations or lease notices would assist in educating operators to plan drilling schedules during the open drilling period.

#### **4.9.2.7.1. PROPOSED RMP**

##### **4.9.2.7.1.1. Raptors**

Under the Proposed RMP, raptor management would be guided by the use of "*Best Management Practices for Raptors and Their Associated Habitats in Utah*" (BLM 2006, Appendix A), using seasonal and spatial buffers, and mitigation, to maintain and enhance raptor habitat, while providing for other resource uses.

Impacts to mineral and energy resources would include an increase in development costs and temporary delay in royalties paid to the federal government and/or the State of Utah. It is difficult to quantify the effects of raptor protection guidelines on mineral and energy development. Spatial and temporal buffers may preclude mineral and energy development in some cases, thereby temporarily reducing the potential number of wells drilled or other mineral developments and temporarily decreasing/delaying royalties paid to the federal government and the State of Utah. Several factors determining the economic impacts are involved, such as the year the lease was issued, the size of the proponent's lease, and the proponent's "priority list." A database of raptor nests and their activity status is kept at the Vernal Field Office. This database would be referenced as part of the site-specific environmental analysis required prior to drilling a well or developing an area for mineral or energy. It can provide the proponent with information and guide the management of its lease, thereby decreasing development costs caused by waiting for a particular nest's appropriate temporal and spatial restriction.

Depending on field conditions, the BLM may be able to eliminate restrictions via exceptions. During site-specific analyses, the spatial or temporal restrictions may be determined to be unnecessary if there are circumstances that would mitigate potential development impacts to raptors, such as terrain or vegetative screen.

Exceptions to spatial and temporal buffers would directly benefit mineral resources by allowing development if protection of the nests is ensured by completion of a site specific assessment form, written documentation from a BLM Field Office biologist confirming that the implementation of the modifications would not impact the success of the nest or the suitability of the site for future nesting, and monitoring which would include strategy employment and implementation of a post-project/mitigation plan. This would increase the potential number of wells drilled or other mineral development, increase the domestic supply of oil and natural gas or other minerals, and increase royalties to the federal government and/or the State of Utah.

##### **4.9.2.7.1.2. Greater Sage-grouse**

Management of Greater Sage-grouse under the Proposed RMP would be similar to Alternative C. It is likely that management decisions under the Proposed RMP would have a greater impact on

mineral and energy development than Alternative D (No Action). Impacts to mineral and energy resources include an increase in development costs and temporary delay in royalties paid to the federal government and/or the State of Utah. Economic impacts to mineral and energy development would depend on the same factors considered for raptors (see above) and vary by alternative.

#### **4.9.2.7.2. ALTERNATIVE A**

##### **4.9.2.7.2.1. Raptors**

In general, raptor protections under Alternative A would be more restrictive to mineral and energy development than Alternative D (No Action). Alternative A would establish spatial and seasonal buffers for raptors under the auspices of best management practices (BMPs) (Appendix A), which would include implementation of buffers comparable to the USFWS *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* (Appendix A), with exceptions allowed by the BLM as long as the protection of raptor nests is ensured. Restrictions are specific to both occupied and unoccupied nests (see Table 4.9.11). The effects on mineral and energy development would be the same as described for the Proposed RMP.

##### **4.9.2.7.2.2. Greater Sage-grouse**

Implementation of the Strategic Management Plan for Greater Sage-grouse would result in impacts to mineral and energy development similar to that described for the Proposed RMP.

**Table 4.9.11. Seasonal Restrictions within Established Buffer Zones Applied to Mineral Resources under the Proposed RMP**

Species	Dates	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bald Eagle	1/1–8/31	■	■	■	■	■	■	■	■	■			
Golden Eagle	1/1–8/31	■	■	■	■	■	■	■	■	■			
Northern Goshawk	3/1–8/15			■	■	■	■	■	■	■			
Northern Harrier	4/1–8/15							■	■				
Cooper's Hawk	3/15–8/31			■	■	■			■				
Ferruginous Hawk	3/1–8/1			■	■	■	■	■	■				
Red-tailed Hawk	3/15–8/15			■				■	■				
Sharp-shinned Hawk	3/15-8/31			■	■	■	■	■	■	■			
Swainson's Hawk	3/1-8/31			■	■	■		■	■	■			
Turkey Vulture	5/1-8/15					■	■	■	■	■			
Peregrine Falcon	2/1–8/31		■	■	■	■	■	■	■	■			
Prairie Falcon	4/1–8/31							■	■				
Merlin	4/1-8/31				■	■	■	■	■	■			
American Kestrel	4/1-8/15				■	■	■	■	■	■			
Osprey	4/1-8/31							■	■	■			
Boreal Owl	2/1-7/31		■	■	■	■	■	■	■	■			
Burrowing Owl	3/1-8/31			■	■	■	■	■	■	■			
Flammulated Owl	4/1-9/30					■	■	■	■	■	■		
Great Horned Owl	2/1–9/31					■	■	■	■	■	■		
Long-eared Owl	3/1-8/15			■	■	■	■	■	■	■			
N. saw-whet owl	3/1-8/31			■	■	■	■	■	■	■			
Short-eared Owl	3/1-8/1			■	■	■	■	■	■	■			
Mexican Spotted Owl	3/1–8/31			■	■	■	■	■	■	■			
N. Pygmy owl	4/1-8/1			■	■	■	■	■	■	■			
W. Screech owl	3/1-8/15			■	■	■	■	■	■	■			
Common Barn-owl	2/1-9/15		■	■	■	■	■	■	■	■	■		

**Table 4.9.11. Seasonal Restrictions within Established Buffer Zones Applied to Mineral Resources under the Proposed RMP**

Species	Dates	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Greater Sage-grouse	3/1–6/15												

**Table 4.9.12. Seasonal Restrictions within Established Buffer Zones Applied to Mineral Resources under Alternative A**

Species	Dates	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bald Eagle	1/1–8/31												
Golden Eagle	1/1–8/31												
Northern Goshawk	3/1–8/15												
Northern Harrier	4/1–8/15												
Cooper's Hawk	3/15–8/31												
Ferruginous Hawk	3/1–8/1												
Red-tailed Hawk	3/15–8/15												
Sharp-shinned Hawk	3/15-8/31												
Swainson's Hawk	3/1-8/31												
Turkey Vulture	5/1-8/15												
Peregrine Falcon	2/1–8/31												
Prairie Falcon	4/1–8/31												
Merlin	4/1-8/31												
American Kestrel	4/1-8/15												
Osprey	4/1-8/31												
Boreal Owl	2/1-7/31												
Burrowing Owl	3/1-8/31												
Flammulated Owl	4/1-9/30												
Great Horned Owl	2/1–9/31												
Long-eared Owl	3/1-8/15												
N. saw-whet owl	3/1-8/31												

**Table 4.9.12. Seasonal Restrictions within Established Buffer Zones Applied to Mineral Resources under Alternative A**

Species	Dates	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Short-eared Owl	3/1-8/1												
Mexican Spotted Owl	3/1-8/31												
N. Pygmy owl	4/1-8/1												
W. Screech owl	3/1-8/15												
Common Barn-owl	2/1-9/15												
Greatger Sage-grouse	3/1-6/15												

### **4.9.2.7.3. ALTERNATIVE B**

#### **4.9.2.7.3.1. Raptors**

Raptor protections under Alternative B would be less restrictive to mineral and energy development than Alternative D (No Action). Impacts to mineral and energy resources include an increase in development costs and temporary delay in royalties paid to the federal government and/or the State of Utah. Management of raptors under Alternative B would consider the least restrictive management options (see Section 4.9.2.7.1.1, Proposed RMP, Raptors; Table 4.9.12).

#### **4.9.2.7.3.2. Greater Sage-grouse**

Management of Greater Sage-grouse under Alternative B would be similar to Alternative D (No Action). It is not likely that management decisions under Alternative B would have a greater impact on mineral and energy development than Alternative D (No Action). Impacts to mineral and energy resources include an increase in development costs and temporary delay in royalties paid to the federal government and/or the State of Utah. Economic impacts to mineral and energy development would depend on the same factors considered for raptors (see Section 4.9.2.7.1.1 Proposed RMP, Raptors) and vary by alternative. The number of acres closed to mineral and energy development due to Greater Sage-grouse protections is included under each of the alternatives. The impacts of management decisions for Greater Sage-grouse are similar to those of raptors.

### **4.9.2.7.4. ALTERNATIVE C**

#### **4.9.2.7.4.1. Raptors**

Management of raptors under Alternative C would implement spatial and seasonal buffers for raptors as recommended in Appendix A, BMPs. This is more restrictive than management of raptors under Alternative D (No Action), and would likely impact mineral resources more than Alternative D (No Action). Impacts to mineral and energy resources include an increase in development costs and temporary delay in royalties paid to the federal government and/or the State of Utah. Under this alternative, there is the potential that fewer wells would be permitted, given the more stringent protection guidelines (see Section 4.9.2.7.1.1 Proposed RMP, Raptors; Table 4.9.13).

#### **4.9.2.7.4.2. Greater Sage-grouse**

Management of Greater Sage-grouse under Alternative C would be more restrictive than Alternative D (No Action), but it is not likely that management decisions under Alternative C would have a greater impact on mineral and energy development than Alternative D (No Action). Impacts to mineral and energy resources include an increase in development costs and temporary delay in royalties paid to the federal government and/or the State of Utah. Economic impacts to mineral and energy development would depend on the same factors considered for raptors (see Section 4.9.2.7.1.1 Proposed RMP, Raptors) and vary by alternative. The number of

acres closed to mineral and energy development due to Greater Sage-grouse protections is included under each of the alternatives. The impacts of management decisions for Greater Sage-grouse are similar to those of raptors.

#### **4.9.2.7.5. ALTERNATIVE D (NO ACTION)**

##### **4.9.2.7.5.1. Raptors**

Alternative D (No Action) would maintain the spatial and seasonal buffers in the Diamond Mountain area for the twenty special status or sensitive raptor species listed in the Diamond Mountain RMP. Raptor buffers in the Book Cliffs area would remain unspecified. Impacts to mineral and energy resources include an increase in the existing development costs due to accommodating existing spatial and seasonal buffers and temporary delay in royalties paid to the federal government and/or the State of Utah (see Section 4.9.2.7.1.1 Proposed RMP, Raptors; Table 4.9.14).

##### **4.9.2.7.5.2. Greater Sage-grouse**

Management of Greater Sage-grouse under Alternative D (No Action) would continue. Impacts to mineral and energy resources include an increase in development costs and temporary delay in royalties paid to the federal government and/or the State of Utah. Economic impacts to mineral and energy development would depend on the same factors considered for raptors (see Section 4.9.2.7.1.1 Proposed RMP, Raptors) and vary by alternative.

#### **4.9.2.7.6. ALTERNATIVE E**

The impacts of Alternative E management decisions on minerals resources would be the same as Alternative C because the decisions are the same.

**Table 4.9.13. Seasonal Restrictions in Established Buffer Zones Applied to Mineral Resources under Alternative B**

Species	Dates	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bald Eagle	1/1–8/31	■	■	■	■	■	■	■	■				
Golden Eagle	1/1–8/31	■	■	■	■	■	■	■	■				
Northern Goshawk	3/1–8/15			■	■	■	■	■	■				
Northern Harrier	4/1–8/15							■	■				
Cooper's Hawk	3/15–8/31			■	■				■				
Ferruginous Hawk	3/1–8/1			■	■	■	■	■	■				
Red-tailed Hawk	3/15–8/15			■				■	■				
Sharp-shinned Hawk	3/15-8/31			■	■	■	■	■	■				
Swainson's Hawk	3/1-8/31			■	■			■	■				
Turkey Vulture	5/1-8/15					■	■	■	■				
Peregrine Falcon	2/1–8/31		■	■	■	■	■	■	■				
Prairie Falcon	4/1–8/31							■	■				
Merlin	4/1-8/31				■	■	■	■	■				
American Kestrel	4/1-8/15				■	■	■	■	■				
Osprey	4/1-8/31							■	■				
Boreal Owl	2/1-7/31		■	■	■	■	■	■	■				
Burrowing Owl	3/1-8/31			■	■	■	■	■	■				
Flammulated Owl	4/1-9/30				■	■	■	■	■	■			
Great Horned Owl	2/1–9/31					■	■	■	■	■			
Long-eared Owl	3/1-8/15			■	■	■	■	■	■				
N. saw-whet owl	3/1-8/31			■	■	■	■	■	■				
Short-eared Owl	3/1-8/1			■	■	■	■	■	■				
Mexican Spotted Owl	3/1–8/31			■	■	■	■	■	■				
N. Pygmy owl	4/1-8/1			■	■	■	■	■	■				
W. Screech owl	3/1-8/15			■	■	■	■	■	■				
Common Barn-owl	2/1-9/15		■	■	■	■	■	■	■	■			





**Table 4.9.15. Seasonal Restrictions within Established Buffer Zones Applied to Mineral Resources under Alternative D (No Action)**

Species	Dates	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Long-eared Owl	3/15–6/15												
Short-eared Owl	4/10–6/15												
Mexican Spotted Owl	3/1–8/1												
Greater Sage-grouse (Book Cliffs)	3/15–6/15												
Greater Sage-grouse (Diamond Mountain)	3/1–6/30												

#### **4.9.2.8. IMPACTS OF WILDLIFE DECISIONS ON MINERAL RESOURCES**

##### **4.9.2.8.1. PROPOSED RMP**

Wildlife resource decisions that restrict activities in deer and elk winter range from December 1 through April 30 would have long-term, indirect, adverse impacts on mineral resource development. Potential impacts would include increasing the costs associated with mineral exploration, extraction, and development, as well as reducing the opportunities for mineral development. The impacts would not be substantially more than current management because timing restrictions, but shift 30 days forward from criteria currently used in the Book Cliffs area. The restricted period in the Diamond Mountain area would be the same under the Proposed RMP.

The decision to analyze impacts (in coordination with the UDWR) that would be mitigated would potentially benefit mineral resource extraction and development in the short-term by allowing some exploration to continue during restricted timeframes. By not implementing timing restrictions, mineral extraction and development would proceed at a faster pace with lower economic costs and risks.

##### **4.9.2.8.2. ALTERNATIVE A**

Wildlife resource decisions that restrict activities in deer and elk winter range from November 15 through April 30 would have the same impacts on mineral resource development as the Proposed RMP, but extend the effect an additional 15 days. As with the Proposed RMP, impacts would include increasing the costs associated with mineral exploration, extraction, and development, as well as reducing the opportunities for mineral development. The decision to analyze impacts (in coordination with the UDWR) that would be mitigated would have the same effect as described under the Proposed RMP.

##### **4.9.2.8.3. ALTERNATIVE B**

Wildlife resource decisions to implement timing restrictions on activities that could adversely impact deer and elk winter range would have long-term, indirect, beneficial impacts to mineral resources. Timing restriction for protection of wildlife species under Alternative B would be less restrictive than the other alternatives. By reducing timing restrictions, mineral extraction and development could proceed at a faster pace with lower economic costs and risks.

Under this alternative, disturbance activities that would displace deer and elk from more than 10% of their total winter habitat at any given time would not be allowed from December 15 through March 15. Waivers would be granted if deer and elk are not present; topography or other attributes screen the activity sufficiently so that the proposed activity would not displace the subject species; or disturbance resulting from the proposed activity would be mitigated. Such waivers are not present under Alternative D (No Action). Also under this alternative, no more than 10% of deer and elk winter habitat would be subject to surface disturbance and remain unclaimed at any given time compared to 2.4% for Alternatives A and C and an unspecified amount in Alternative D (No Action).

**4.9.2.8.4. ALTERNATIVE C**

Wildlife resource decisions to implement timing restrictions on activities that could adversely impact deer and elk winter range would have long-term, indirect, adverse impacts to mineral resources. Impacts include increasing the costs associated with mineral exploration, extraction, and development.

The impacts of this decision would be the same as for Alternative A and only slightly different than Alternative D (No Action). Also under this alternative, 560 acres per township (prorated based on percentage of the BLM-managed crucial deer winter range within the township [approximately 2.4%]) of deer and elk winter habitat would be subject to surface disturbance compared to 10% for Alternative B, 10% for Alternative A, and an unspecified amount in Alternative D (No Action). Because Alternative D (No Action), does not specify what percentage of new surface-disturbing activity would be allowed in deer and elk winter habitat it is unclear if wildlife resource decisions under this alternative would restrict mineral resources development more or less than Alternative D (No Action).

**4.9.2.8.5. ALTERNATIVE D (NO ACTION)**

Wildlife resource decisions to implement timing restrictions on activities that would adversely impact deer and elk winter range would have long-term, indirect, adverse impact to mineral resources. Impacts include increasing the costs associated with mineral exploration, extraction, and development.

Alternative D (No Action) does not specify what percentage of new surface-disturbing activity would be allowed in deer and elk winter habitat. Therefore it is unclear whether this particular factor in wildlife resource decisions would restrict mineral resources development more or less than any of the other alternatives.

**4.9.2.8.6. ALTERNATIVE E**

The impacts of wildlife decisions on minerals would be the same as discussed under Alternative C because the decisions are the same.

**4.9.2.9. IMPACTS OF VISUAL MANAGEMENT DECISIONS ON MINERAL RESOURCES**

Mineral development activities would be subject to the Visual Resource Management (VRM) Class objectives of the area within which development would occur. Areas managed for landscape change as VRM Class III and Class IV allow a wider range of impacts on scenery, and generally would have negligible impacts on mineral development in the VPA. Areas with higher scenic values, or areas managed for little to no landscape change (VRM Class I and Class II) allow little or no alteration to the line, form, color and texture that characterize the existing landscape and would have a greater impact to mineral development in the VPA. Table 4.9.16 shows the number of acres within each VRM class by alternative.

**Table 4.9.16. VRM Class Acreages by Alternative**

VRM Class	Proposed RMP	Alternative A	Alternative B	Alternative C	Alternative D (No Action)	Alternative E
VRM I	57,776	63,136	53,058	145,781	53,086	334,516
VRM II	231,911	294,773	114,030	362,660	113,686	259,694
VRM III	786,612	716,186	199,179	580,846	199,192	535,586
VRM IV	643,641	645,845	1,353,967	630,653	1,353,976	590,140
<b>Total</b>	<b>1,719,940</b>	<b>1,719,940</b>	<b>1,719,940</b>	<b>1,719,940</b>	<b>1,719,940</b>	<b>1,719,940</b>
<b>VRM I and II</b>	<b>289,687</b>	<b>357,909</b>	<b>166,794</b>	<b>508,441</b>	<b>166,772</b>	<b>594,210</b>
<b>VRM III and IV</b>	<b>1,430,253</b>	<b>1,362,031</b>	<b>1,553,146</b>	<b>1,211,499</b>	<b>1,553,168</b>	<b>1,125,730</b>

**4.9.2.9.1. PROPOSED RMP**

Under the Proposed RMP, the number of acres included in VRM Classes I and II would increase by approximately 74%, compared to Alternative D (No Action).

An increase in the number of acres in VRM Classes I and II could have an adverse impact on mineral resource development. Direct, adverse impacts would include increased production costs associated with mineral development and the exclusion of mineral development from particular areas. An increase in the number of acres in VRM Classes I and II would also lead to a decrease in the number of locations where potential wells could be drilled. The loss of locations could indirectly lead to a decrease in the available supply of oil and natural gas to western markets.

Indirect impacts of visual resources decisions on mineral development would be adverse. A decrease in the number of potential oil and gas wells would lead to a decrease in royalties paid to the federal government and/or the State of Utah.

**4.9.2.9.2. ALTERNATIVE A**

Under Alternative A, the number of acres included in VRM Classes I and II would increase by approximately 115%, compared to Alternative D (No Action).

An increase in the number of acres in VRM Classes I and II could have an adverse impact on mineral resource development. Direct, adverse impacts would include increased production costs associated with mineral development and the exclusion of mineral development from particular areas. An increase in the number of acres in VRM Classes I and II would also lead to a decrease in the number of locations where potential wells could be drilled. The loss of locations could indirectly lead to a decrease in the available supply of oil and natural gas to western markets.

Indirect impacts of visual resources decisions on mineral development would be adverse. A decrease in the number of potential oil and gas wells would lead to a decrease in royalties paid to the federal government and/or the State of Utah.

**4.9.2.9.3. ALTERNATIVE B**

Under Alternative B, the number of acres included in VRM Classes I and II would not change significantly (0.01% increase), compared to Alternative D (No Action). Impacts would be similar to Alternative D (No Action).

**4.9.2.9.4. ALTERNATIVE C**

Under Alternative C, the number of acres included in VRM Classes I and II would increase by approximately 205%, compared to Alternative D (No Action).

An increase in the number of acres in VRM Classes I and II would have an adverse impact on mineral resource development. Direct, adverse impacts would include increased production costs associated with mineral development and the exclusion of mineral development from particular areas. An increase in the number of acres in VRM Classes I and II would also lead to a decrease in the number of locations where potential wells could be drilled. The loss of locations could indirectly lead to a decrease in the available supply of oil and natural gas to western markets.

Indirect impacts of visual resources decisions on mineral development would be adverse. A decrease in the number of potential oil and gas wells would lead to a decrease in royalties paid to the federal government and/or the State of Utah.

**4.9.2.9.5. ALTERNATIVE D (NO ACTION)**

Under Alternative D (No Action), the number of acres included in VRM Classes I and II would not change.

Direct, adverse impacts would continue to include increased production costs associated with mineral development, the exclusion of mineral development from a particular area and a decrease in the number of locations where potential wells could be drilled. The loss of locations could indirectly lead to a decrease in the available supply of oil and natural gas to western markets.

Indirect impacts of visual resources decisions on mineral development would be adverse. A decrease in the number of potential oil and gas wells would lead to a decrease in royalties paid to the federal government and/or the State of Utah.

**4.9.2.9.6. ALTERNATIVE E**

Under Alternative E, the number of acres managed under VRM Classes I and II objectives would increase by approximately 256%, compared to Alternative D (No Action).

An increase in the number of acres in VRM Classes I and II would have an adverse impact on mineral resource development, with direct, adverse impacts that would include increased production costs associated with mineral development and the exclusion of mineral development from areas where minerals activities would not meet VRM objectives. An increase in the number

of acres in VRM Classes I and II would also lead to a decrease in the number of locations where potential wells could be drilled. This loss of potential drilling locations could indirectly lead to a decrease in the available supply of oil and natural gas to western markets.

Indirect impacts of visual resources decisions on mineral development would be adverse. A decrease in the number of potential oil and gas wells would lead to a decrease in royalties paid to the federal government and/or the State of Utah

#### **4.9.2.10. SUMMARY OF IMPACTS FROM ALTERNATIVES**

##### **4.9.2.10.1. ALTERNATIVE A**

Resource decisions made under Alternative A would, in general, have a long-term, indirect, adverse impact on mineral resource development in the VPA. Resource decisions would be slightly more restrictive to minerals development than Alternative D (No Action). There would be an increase in the potential number of oil and gas wells that could be drilled in each of the six RFD areas. Resource decisions would be less restrictive to minerals development than those made for Alternative C and more restrictive than those made for Alternative B.

##### **4.9.2.10.2. ALTERNATIVE B**

Resource decisions made under Alternative B would have both long-term, indirect, adverse, and long-term direct beneficial impacts on mineral resource development in the VPA. There would be an increase in the potential number of oil and gas wells that could be drilled in each of the six RFD areas. In general, resource decisions would be less restrictive to mineral resources development than those made for each of the other alternatives. Cultural and wildlife resource decisions would have a long-term direct, beneficial impact on mineral resource development. All other resource decisions would have an indirect, adverse impact on mineral resource development but not substantially more so than each of the other alternatives. Resource decisions would be substantially less restrictive than those for Alternative C.

##### **4.9.2.10.3. ALTERNATIVE C**

Alternative C decisions would have a long-term, indirect, adverse impact on mineral resource development in the VPA. There would be a slight decrease in the potential number of oil and gas wells that could be drilled in each of the six RFD areas. In general, resource decisions would be more restrictive than those made for each of the other alternatives.

##### **4.9.2.10.4. ALTERNATIVE D (NO ACTION)**

Resource decision made under Alternative D (No Action) would have a long-term, indirect, adverse impact on mineral resource development in the VPA. Resource decisions would be less restrictive than those made for Alternatives C and E, more restrictive than Alternative A, and only slightly more restrictive than Alternative B.

**4.9.2.10.5. ALTERNATIVE E**

Alternative E resource decisions would have a long-term, indirect, adverse impact on mineral resource development in the VPA. There would be a decrease in the potential number of oil and gas wells that could be drilled in five of the six RFD areas, and minerals resource decisions would be more restrictive than those under the other alternatives because of stipulations to protect non-WSA lands with wilderness characteristics.

**4.9.3. MITIGATION MEASURES**

Under the Proposed RMP and all action alternatives there would be a net increase in the number of predicted oil, gas, and CBNG wells as compared to Alternative D (No Action). Similarly, neither the Proposed RMP nor any of the alternatives would substantially restrict mineral development. Neither the Proposed RMP nor any of the alternatives would result in impacts that would necessitate mitigation of oil, gas, and mineral resources; therefore, mitigation measures would not be necessary.

**4.9.4. UNAVOIDABLE ADVERSE IMPACTS**

Under the Proposed RMP and all action alternatives there would be a net increase in the number of predicted oil, gas, and CBNG wells as compared to Alternative D (No Action). Similarly, none of the alternatives would substantially restrict mineral development. Accordingly, neither the Proposed RMP nor any of the alternatives would result in unavoidable adverse impacts to mineral development.

**4.9.5. SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY**

Once fossil fuel and mineral resources are extracted and the short-term beneficial uses (e.g., increased supply of minerals to meet demand, decreased production costs, increased royalties) are realized, the resources would no longer be available for long-term or future production.

**4.9.6. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS**

The extraction and development of mineral resources from the VPA would result in an irreversible loss of those minerals due to the finite nature of the resource.