

APPENDIX 3

ALLOTMENT MANAGEMENT CATEGORY CRITERIA

Maintain Category Criteria

Present range condition is satisfactory.

Allotments have moderate or high resource production potential, and are producing near their potential (or trend is moving in that direction).

No serious resource-use conflicts exist.

Opportunities may exist for positive economic return from public investments.

Present management appears satisfactory.

Other criteria appropriate to the environmental impact statement (EIS) area.

Improve Category Criteria

Present range condition is unsatisfactory.

Allotments have moderate to high resource production potential and are producing at low to moderate levels.

Serious resource-use conflicts exist.

Opportunities exist for positive economic return from public investments.

Present management appears unsatisfactory.

Other criteria appropriate to EIS area.

Custodial Category Criteria

Present range condition is not a factor.

Allotments have low resource production potential, and are producing near their potential.

Limited resource-use conflicts may exist.

Opportunities for positive economic return on public investment do not exist or are constrained by technological or economic factors.

Present management appears satisfactory or is the only logical practice under existing resource conditions.

Other criteria appropriate to EIS area.

APPENDIX 4

SPECIALIZED MINERAL TERMINOLOGY

*NOTE: This appendix is a complete revision from the information that was presented in the Draft EIS.

CATEGORY SYSTEM

INTRODUCTION

The oil and gas category system was originally placed into effect in 1976 through a process that included the preparation of the Vernal District Oil and Gas Environmental Assessment Record and the categorization of lands. The category system was established to provide an efficient, responsive oil and gas leasing system while giving consideration to other resource values that require protection.

In this document, the category system has been expanded to include combined hydrocarbons. Oil and gas and tar sands are treated separately within the text of this Environmental Impact Statement (EIS) for ease of understanding. Each mineral resource has been categorized under the various alternatives. After the decision is made on the selection of the Book Cliff's Resource Management Plan, the separate mineral resources will then be combined into a single category system for BLM State Office use. Due to the complexity of this system, it is not be presented within this document.

OIL AND GAS

Category 1 - Open Lease Areas

This category includes lands that possess the resource values which would not be in serious conflict with mineral exploration and development. These lands are leased subject to standard stipulations which provide for the protection of the resource values and environmental components commonly associated with the public lands and require the lessee to take certain measures to mitigate possible impacts that might be created by exploration and development. These stipulations do not impose major restrictions on the lessee activities, but provide for operations under controlled conditions.

The 43 CFR 3100 lists information that is required in the environmental report which is submitted by the oil and gas lessee to BLM. This information is commonly reported by the lessee in the 13 point surface use plan which is required as part of every oil and gas lease. The 13 point plan is written in response to the BLM notice to the lessee's No. 6 (NTL-6) which also gives BLM the authority to evaluate the environmental impacts. An 'on-site' inspection with BLM and lessee representatives is conducted in relation to the surface use plan. This inspection is made to determine the most feasible and environmentally acceptable areas for well sites, access roads, and other proposed surface use areas. An environmental analysis is prepared by BLM in response to the proposal. The analysis identifies methods for mitigating adverse environmental effects associated with the proposed action. Other oil and gas regulations and lease stipulations refer to the 10-point subsurface plan, procedures for disposal of produced water,

reporting of undesirable events such as spills, fires, etc. This type of information is standard with every oil and gas lease, regardless of category.

Category 2 - Lease Areas Requiring Special Stipulations

Some areas contain resource values where a conflict with mineral exploration and development might occur; therefore, leasing in this category is subject to special stipulations that provide additional protection to the watersheds, critical wildlife habitat areas, recreation areas, unique archaeological and historical sites, etc. The special stipulations may limit exploration to various times of the year, prescribe special construction techniques, limit the location of developments, or require other similar special resource protections.

The following special stipulations are in addition to the lease terms and standard stipulations, and are necessary to protect specific resource values on the lease area:

1. All of the land in this lease is included in (recreation or special area, etc.). Therefore, no occupancy or disturbance of the surface of the land described in this lease is authorized. The lessee, however, may extract the oil and gas resources in this lease by directional drilling from sites outside this lease. If a proposed drilling site lies on land administered by the Bureau of Land Management, a permit for use of the site must be obtained from the BLM District Manager before drilling or other development begins.
2. No access (or work trail or road, earth cut or fill, structure or other improvement), other than an active drilling rig, will be permitted if it can be viewed from the (road, lake, river, etc.).
3. No occupancy or other activity on the surface of (legal subdivision) is allowed under this lease.

4. No occupancy or other surface disturbance will be allowed within _____ feet of the _____ (road, trail, river, creek, canal, etc). This distance may be modified when specifically approved in writing by the authorized officer of the Federal surface management agency.
5. No drilling or storage facilities will be allowed within _____ feet of (live water, the reservoir, the archaeological site, the historical site, the paleontological site, etc.) located in (legal subdivision). This distance may be modified when specifically approved in writing by the concurrence of the authorized officer of the Federal surface management agency.
6. No occupancy or other surface disturbance will be allowed on slopes in excess of _____ percent, without written permission from the authorized officer of the Federal surface management agency.
7. In order to (minimize watershed damage, protect important seasonal wildlife habitat, etc.) exploration, drilling, and other development activity will be allowed only (during the period from _____ to _____ during dry soil period, over a snow cover, frozen ground). This limitation does not apply to maintenance and operation of producing wells. Exceptions to this limitation in any year may be specifically approved by the authorized officer of the Federal surface management agency.
8. In order to minimize watershed damage during muddy and/or wet periods the authorized officer of the Federal surface management agency may prohibit exploration, drilling, or other development. This limitation does not apply to maintenance and operation of producing wells.
9. The _____ (trail/road) will not be used as an access road for activities on this lease, except as follows: (No exceptions, weekdays during recreation season, etc.).
10. No _____ will be allowed within _____ feet of the _____. This area contains _____ acres and is described as follows:

Reasons:

First blank to be filled in with one or more of the following: drilling, storage facilities, surface disturbance or occupancy. Second and third blanks to be filled in with one or more of the following:

- a. _____ feet wildlife habitat essential to specific species

- b. _____ feet peripheral or unique vegetative type
- c. 200 feet either side of centerline of roads or highways
- d. 500 feet of normal high water line on all streams, reservoirs, lakes
- e. 600 feet of all springs
- f. 400 feet of any improvements

Note: Stipulation No. 10 could be used in place of Stipulation Nos. 4 and 5.

11. In order to (minimize) (protect) _____

will be allowed only during _____.
 This does not apply to maintenance and operation of producing wells and facilities. Lands within leased area to which this stipulation applied are described as follows:

Reasons:

First blank to be filled in with one or more of the following:

- a. Watershed damage
- b. Soil Erosion
- c. Seasonal wildlife habitat (winter range, calving/lambing area, etc.)
- d. Conflict with recreation

Second blank to be filled in with one or more of the following:

- a. Surface-disturbing activities
- b. Exploraion
- c. Drilling
- d. Development

Third blank to be filled in with one or more of the following:

- a. Period from _____ to _____
- b. Dry soil periods
- c. Over the snow
- d. Frozen ground

Note: Stipulation No. 11 could be used in place of Stipulation No. 4, giving greater definition as to restriction.

12. The lessee is given notice that all or portions of the lease area contain special values, are needed for special purposes or require special attention to prevent damage to surface resources. Any surface use or occupancy within such areas will be strictly controlled. Use or occupancy will be authorized only when the lessee/operator demonstrates that the area is essential for operations and when the lessee/operator submits a surface use and operations plan, which is satisfactory to the Federal surface management agency, for the protection of these special values and existing or planned uses. Appropriate modifications to the imposed restrictions will be made for the maintenance and operations of producing oil and gas wells.

After the Federal surface management agency has been advised of the proposed surface use or occupancy on these lands, and on request of the lessee/operator, the Federal surface management agency will furnish further data on such areas, which now include but are not limited to:

(Legal land description to lot and/or quarter, quarter section.)

Reasons for Restriction

Duration of Restriction: (year-round, month(s))

Prior to acceptance of this stipulation the prospective lessee is encouraged to contact the Federal surface management agency for further information regarding the restrictive nature of this stipulation.

Note: Stipulation No. 12 is not exclusionary but it notifies the lessee/operator that the described lands contain special values and that these values must be considered in the proposed operating plan. This stipulation is an alternative to many of the above stipulations.

Category 3 - Open Lease Areas Subject to No Surface Occupancy

These areas have special resource values or land uses with which surface mineral operations would not be compatible. These areas could include camping and picnic areas, research areas, scenic areas, recreation and public purposes, significant historical and archaeological areas, etc.

Drilling would be permitted but would be limited to whipstocking or slant drilling from off-site locations. Use of this category is, therefore, limited to that feasible for drilling in this fashion. A maximum of one mile is considered feasible (using present technology) if approachable from two or more sides (one-half mile if that area can be approached from only one side).

Category 4 - No Lease Areas

These are areas where mineral leasing is undesirable pending further planning or special studies and includes areas that are too large in size to permit slant drilling or which include critical resource values that cannot be adequately protected by the lease categories. Examples could include areas of potential wild and scenic river corridors, and larger high quality scenic areas where roads, pipelines, drilling activities, etc. are not compatible with management for these uses. As further information is obtained, and public needs are better understood, these areas may continue to be closed to leasing or may be made available.

No lease is issued; therefore, no stipulations required.

COMBINED HYDROCARBON LEASING

General

The Combined Hydrocarbon Leasing Act of 1981 (43CFR 3140 and 3150, 95 Stat. 1070) changed the definition of oil to include oil saturated sands (tar

sands). Conventional oil and gas and nonconventional tar sand recovery are provided for in the same combined hydrocarbon lease.

Leasing Within Special Tar Sand Areas

1. Companies which held existing oil and gas leases could have converted to a combined hydrocarbon lease before November 16, 1983. They must have submitted a plan of operations for tar sand development which must be approved by the BLM. A separate EIS would be prepared in response to these conversions.
2. The oil and gas lease term could be automatically extended by demonstrated oil and/or gas production on the leased land. Those leases that were not converted to a combined hydrocarbon lease will have no provisions for the development of tar sands.
3. Leases under the Competitive Combined Hydrocarbon Lease Program could be scheduled, after completion of the Book Cliffs RMP. These leases could be issued on currently unleased areas or areas where oil and gas leases expire. These leases will be consistent with stipulations developed in the RMP and related environmental analysis.

Mitigation

Although tar sands and oil and gas are treated separately within the RMP, a single category system will emerge during subsequent activity planning. During that phase, tar sand stipulations would be developed that will be

separate from the oil and gas stipulations but will be attached to the same lease. Some of the special oil and gas stipulations may be applicable to certain aspects of tar sand development, such as exploratory drilling operations. In addition, certain stipulations could limit the lessee to conventional oil and gas recovery with no provision for tar sand development. Other stipulations could notify the lessee that renewable resource values identified in the RMP would require special consideration in the plan of operations.

Prior to any surface disturbance, a plan of operations must be submitted. The plan would be required to meet the requirements of 43 CFR 3160 for drilling and exploration work and 43 CFR 3570 for mining operations. An environmental analysis (EA or EIS) would be prepared in response to the submitted plan of operations. Site specific stipulations would be developed which would deal with a wide range of subjects including, but not limited to, reclamation procedures, erosion control methods, threatened and endangered plants and animals, cultural resource protection, and watershed and wildlife protection.

Mitigation identified could then result in various modifications of the mining plan to provide for environmentally acceptable development.

FAVORABILITY SYSTEM

The favorability and certainty system, presented for the BCRA on Figure 3-1, and subsequently described in this appendix, is an attempt to quantitatively assess the potential for future oil and gas development.

Favorability 1 (f1)

Lands designated as having the lowest favorability, "f1", for oil and gas will be within a geologic environment dominated by igneous and metamorphic rocks that constitute a regional basement at or near the surface; or by intense recent tectonic activity, particularly where characterized by pervasive fracturing or brecciation. In such areas, source rocks either do not exist or have been strongly altered, with concomitant loss of most of the contained volatiles and, in some cases, the alteration of remnant carbon to graphite. Similarly, traps or reservoir rocks either have not developed or have been altered or destroyed by intense igneous, metamorphic, and tectonic events. Consequently, in most of these present-day geologic environments any preexisting concentrates of oil and gas would have been vaporized by the intense heat, or lost to the hydrosphere or atmosphere upon a loss of confining pressure during fracturing and brecciation.

Favorability 2 (f2)

The geologic environment of an area rated at the "f2" level for oil and gas is considered to have a potential only for small, widely scattered oil and gas pools. The size of recoverable hydrocarbon accumulations in such an

environment would be anticipated to be less than 10 million barrels of oil or, if gas, no more than 60 billion cubic feet. The cumulative thickness of sedimentary rocks in the "f2" geologic environment will generally be less than a few thousand feet thick. Such a relatively thin stratigraphic sequence generally limits the volume of both favorable source and reservoir rocks; hence the expected small size and low frequency of oil and gas pool.

Moreover, any medium-size or larger accumulations that may have existed in earlier favorable environments in the area have since been destroyed or reduced in size by recent tectonic events and/or fresh water flushing.

Favorability 3 (f3)

Lands considered favorable for oil and gas at the "f3" level are within an environment that may contain either densely-spaced small pools, or scattered, moderately-large pools. Recoverable fluid hydrocarbons are anticipated to be between 10 and 50 million barrels of oil, or between 60 and 300 billion cubic feet of gas. The geologic environment deemed likely to host such intermediate quantities of oil and gas would generally contain a sedimentary sequence less than 5,000 feet thick. This rock sequence must be heterogeneous in composition and contain at least one organically-rich marine formation to provide a hydrocarbon source. Moreover, the geologic history of the area must be such that the presence of stratigraphic and structural traps can be reasonably inferred. Finally, evidence of possible fresh-water flushing of potential reservoir rocks must be minimal.

Favorability 4 (f4)

Lands designated "f4" must be within a geologic environment that is favorable for large accumulations of oil and gas. Recoverable fluid hydrocarbons in such an environment are anticipated to be more than 50 million barrels of oil, or if gas, more than 300 billion cubic feet. The geologic environment must include a heterogeneous sequence of sedimentary rocks with a thickness generally well over 5,000 feet. Organically-rich marine source rocks should be relatively abundant. Numerous reservoir rocks and stratigraphic and structural traps must be confidently inferred to exist in the area based on its geologic history. Multiple oil and gas-reservoirs stacked in vertical succession should be reasonably inferred to occur in this geologic environment. Recent tectonism must be at a minimum, if present at all. There should be no evidence of possible fresh-water flushing of potential reservoir rocks.

CERTAINTY SYSTEM

The degree of certainty of oil and gas occurrence is based on the proximity of direct evidence that either supports or refutes the existence of the resource in the immediate environment of the area. Direct evidence includes the following: (1) surface oil and gas seeps caused by leakage from fractured reservoirs; (2) tar sands or oil-impregnated sandstone deposits (oil shales are nonmatured or only partly matured source rocks and are treated as a separate resource); (3) results from exploration and development (includes wildcat, deeper-and shallower-pool tests, outpost or extension tests,

and development wells); and (4) analytical data such as composition and specific gravity that offer proof of fluid-hydrocarbon presence.

Geophysical data, chiefly seismic, are often mistakenly assumed to provide "proof", or at least a high degree of certainty, that oil and gas resources actually occur in an area. However, geophysical data are no more than tools used to interpret the stratigraphy and structure of a region, as a means of determining its degree of "geologic favorability" for oil and gas. As such, geophysical data will be used as a measure of favorability--not certainty.

Data on well yield and on oil and gas quality are considered economic information and are used along with other data to estimate the contribution that oil and gas will make to the Overall-Importance Rating of the area. Such data include: flow or pumping rates for wells; specific-gravity determinations; chemical analyses for sulfur, nitrogen, and the amounts of various metal and mineral contaminants (in the case of crude oil); and hydrogen, sulfide, nitrogen, carbon dioxide, helium analyses (in the case of raw gas).

Certainty Factor 1 (c1)

In the lowest level of certainty for oil and gas, "c1", no direct data are available to support or refute the occurrence of petroleum within the area, regardless of the level of geologic favorability. No wells have been drilled in or near the area, nor are any oil or gas seeps, tar sands, or oil-impregnated sandstone deposits known in the vicinity. Positive evidence of resource occurrence is far removed from the area, or is on a trend

considered unrelated to the geology of the area. Accordingly, the area will not be within an "established" or generally accepted "potential" petroliferous province.

Certainty Factor 2 (c2)

A lower-intermediate level of certainty, "c2", for oil and gas again implies that no direct data (seeps, exploratory wells, or producing wells) occur within or very near the area being evaluated. However, positive occurrence data must be available from the vicinity of the area; thus the area will probably be within a petroliferous province (basin) with at least one producing or formerly commercial oil and/or gas field. Seeps, shows, or productive wells that are present at some distance along a known productive trend are considered as stronger evidence for certainty than closer-in occurrences known to be off-trend. Thus, oil and gas shows as much as several miles away on-trend are better indications of certainty than those less than a mile distant but off-trend. Positive-occurrence data on parallel similar-type trends, although at some distance, are considered evidence for at least a "c2" certainty.

Certainty Factor 3 (c3)

The "c3", or higher-intermediate, degree of certainty for oil or gas requires the recognition of at least one seep, a show in an exploratory well, or a producing well from within or very near the area being evaluated. Moreover, the area will likely be within an established petroleum-producing province. If several wells have been drilled in or near the area, at least

one must have a strong show. A "c3" rating can also be used if the rating-- team consensus deems that the extrapolation of nearby positive-direct data is stronger than for a "c2" certainty. (If a number of wells from within or near the area have been drilled and all were dry, a "c3" or "c4" certainty rating would be applied in conjunction with a low favorability.)

Certainty Factor 4 (c4)

The highest level of oil and gas certainty, "c4", is used only when the area being evaluated lies within a well-known, productive petroliferous province. Abundant and direct evidence such as seeps, shows, or producing wells occur within or immediately adjacent to the area. (By definition, when a "c4" certainty is used with an "f1" favorability, the dual rating indicates with a high-degree of certainty that commercial quantities of oil and gas do not occur in or near the area.)