RECORD OF DECISION

Oil Shale and Tar Sands Resources Resource Management Plan Amendments.

November 17, 2008

MISSION STATEMENT

It is the mission of the Bureau of Land Management (BLM), an agency of the Department of the Interior, to manage BLM-administered lands and resources in a manner that best serves the needs of the American people. Management is based upon the principles of multiple use and sustained yield taking into account the long-term needs of future generations for renewable and nonrenewable resources.

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RECORD OF DECISION

INTRODUCTION

This Record of Decision (ROD) describes the Bureau of Land Management's (BLM's) proposal to amend 10[1] Resource Management Plans (RMP) to identify the most geologically prospective public lands in Colorado, Utah, and Wyoming for oil shale and tar sands resources, and to designate certain of these lands as available for application for commercial leasing[2] and future exploration and development of these resources. These 10 RMPs still provide decisions for the management of the public lands for other resource uses and values.

The RMP amendments were described as the Proposed Plan in the September 2008 Proposed Oil Shale and Tar Sands Resource Management Plan (PRMP) Amendments to Address Land Use Allocations in Colorado, Utah, and Wyoming and Final Programmatic Environmental Impact Statement (FPEIS)(USDI-BLM-2008), and received preliminary approval by the Assistant Secretary, Land and Minerals Management. The RMP amendments, approved in this ROD, serve as the first step in the process to establish a commercial oil shale and tar sands program that meets the intent of Congress while taking advantage of the best available information and practices to minimize impacts and ensure that states, local communities, and the public have the opportunity to be involved.

This ROD provides the background on development of the plan and rationale for approving the proposed decisions contained in the Proposed Plan. The attached Resource Management Plan (RMP) Amendments to Address Land Use Allocations in Colorado, Utah, and Wyoming

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[1] The ROD for the Price Field Office RMP/EIS, the Richfield Field Office RMP/EIS, and the Vernal Field Office RMP/EIS were signed in October 2008 and the Monticello RMP/EIS was signed in November 2008. These decision documents supersede the decision contained in the prior RMPs [Book Cliffs RMP (BLM 1985); Diamond Mountain RMP (BLM 1994); Price River Resource Area MFP, as amended (BLM 1989); Henry Mountain MFP (BLM 1982); San Rafael Resource Area RMP (BLM 1991); and San Juan Resource Area RMP (BLM 1991)] for the planning areas but did not make decisions for oil shale and tar sands resources. Those decisions for oil shale and tar sands resources are contained in this ROD.

Ten land use plans are being amended, six land use plans cover areas containing only oil shale resources, 2 land use plans cover areas containing only tar sands resources and 2 land use plans cover areas containing both oil shale and tar sands resources.

[2] While the term "commercial lease" was used throughout the PRMP/FPEIS, the use of the term there, as here, represents that BLM may consider issuing commercial leases or research, development, and demonstration leases, or both in the areas designated as available for application.

The phrase "available for application for leasing" is used above, and throughout the document, rather than "available for leasing" to highlight that, unlike BLM's practice with respect to oil and gas leasing, additional National Environmental Policy Act (NEPA) analysis will be required prior to the issuance of any lease of oil shale or tar sands resources.

(Attachment –Appendix A) (also referred to as the Approved Plan Amendments) describes the decisions.

The purpose and need for the Approved Plan Amendments is to meet the requirements established by Congress in Section 369 of the Energy Policy Act of 2005. In August 2005, the U.S. Congress enacted the Energy Policy Act of 2005, Public Law (P.L.) 109-58. In Section 369 of this Act, also known as the "Oil Shale, Tar Sands, and Other Strategic Unconventional Fuels Act of 2005," Congress declared that oil shale and tar sands (and other unconventional fuels) are strategically important domestic energy resources that should be developed to reduce the Nation's growing dependence on oil from politically and economically unstable foreign sources. To support this declaration of policy, Congress directed the Secretary of the Interior (the Secretary) to undertake a series of steps, several of which are directly related to the development of a commercial leasing program for oil shale and tar sands.

A principle provision required the Secretary to "…complete a programmatic environmental impact statement for a commercial leasing program for oil shale and tar sands resources on public lands, with an emphasis on the most geologically prospective lands in Colorado, Utah, and Wyoming." The decisions analyzed in the Oil Shale and Tar Sands Programmatic Environmental Impact Statement (PEIS) satisfy this statutory requirement.

OVERVIEW OF THE ALTERNATIVES — OIL SHALE

The PRMP/PEIS study area for the oil shale resources includes the most geologically prospective resources of the Green River Formation located in the Green River, Piceance, Uinta, and Washakie Basins and encompasses approximately 3,540,000 acres.

The BLM identified the most geologically prospective areas for oil shale development based on the grade and thickness of the oil shale deposits. The most geologically prospective oil shale resources in Colorado and Utah are those deposits that yield 25 gallons of shale oil per ton of rock (gal/ton) or more and are 25 feet thick or greater. In Wyoming, where the oil shale resource is not as high of a quality resource as it is in Colorado and Utah, the most geologically prospective oil shale resources are those deposits that yield 15 gal/ton or more of shale oil and are 15 feet thick or greater.

Figure 1 shows the four oil shale basins that were mapped based on the extent of the Green River Formation and the most geologically prospective oil shale resources within those basins.

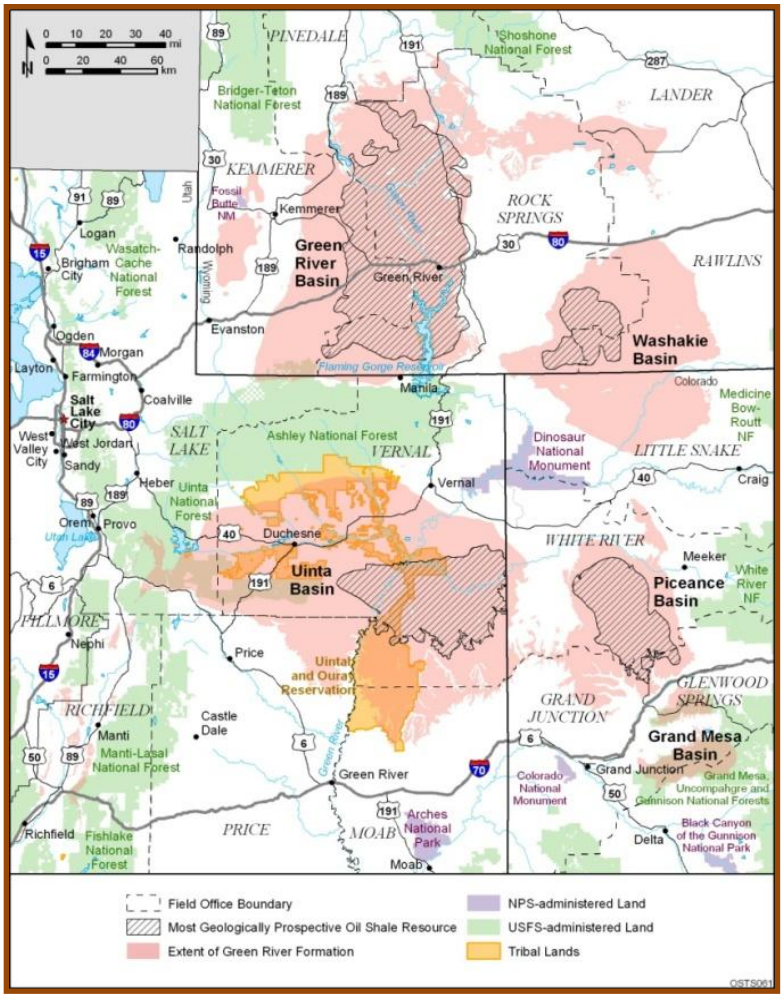

Figure 1: Most Geologically Prospective Oil Shale Resources within the Green River formation Basins in Colorado, Utah and Wyoming

The oil shale resources within the defined study areas are located within the jurisdiction of eight separate BLM administrative units. These units include the Glenwood Springs, Grand Junction, and White River Field Offices in Colorado; the Price, and Vernal Field Offices in Utah; and the Kemmerer, Rawlins, and Rock Springs Field Offices in Wyoming. Table 1 presents the total acreage of the most geologically prospective oil shale areas.

Table 1: Total Size in Acres of the Green River Formation Basins, Most geologically prospective Oil Shale Areas, and Acres of BLM-Administered and Split Estate Lands within the Most Prospective Areas in each State a, b

		Most Geologically Prospective Area		
State	Total Size of Basin	Most Geologically Prospective Area	Total BLM-Administered Lands	Total Split Estate Lands (Federal Minerals)
Colorado Piceance Basin	1,185,700	503,342	319,710	41,940
Utah Uinta Basin [c]	2,977,900	840,213	560,972	77,220
Wyoming Green River and Washakie Basins	4,506,200	2,194,483	1,257,680	39,406
Total	8,669,800	3,538,038	2,138,361	158,566

[a] Totals may not be exact because of rounding. These estimates were derived from geographic information system (GIS) data compiled for the PEIS analyses. The GIS data may contain errors; therefore, these estimates should be considered to be only representative of the size of the oil shale resources and the distribution of BLM-administered and split estate lands.

[b] Split estate lands include areas where the Federal government owns, and the BLM administers, the subsurface mineral rights, but the surface estate is owned by tribes, states, or private parties.

Three alternatives, including a no action alternative, were analyzed. All management under any of the alternatives would comply with Federal laws, rules, regulations, and policies. Alternative A (the no action alternative) would not amend the plans. Management prescriptions in existing plans are not modified under this alternative. Alternatives B and C described different management approaches to amending RMPs to designate certain lands as being available for application for future commercial leasing and development. The approach taken in both Alternatives B and C is designed to ensure that future oil shale leasing and development is possible when economic and environmentally acceptable.

Alternative A is the no action alternative. In this alternative, no amendments to existing land use plans to identify lands available for application for commercial oil shale leasing would be completed. Existing land use plans would continue to provide direction for management of public lands. Under this alternative for oil shale, there are approximately 294,680 acres currently classified in the White River RMP (BLM 1997b) in Colorado as available for oil shale leasing, and at the time the analysis was conducted, there were approximately 58,100 acres classified as available for leasing in the former Book Cliffs RMP (BLM 1985) in Utah.

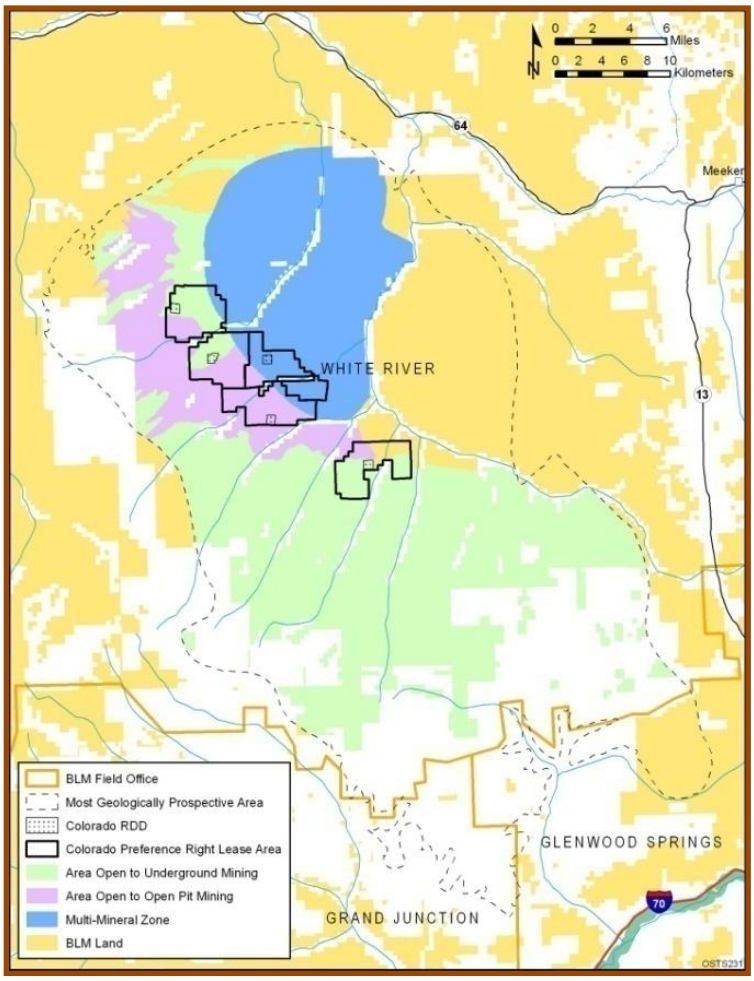

Figure 2: Lands Available for Oil Shale Leasing Under Alternative A in Colorado.

The classified lands in Colorado are located in the Piceance Basin and include 223,860 acres classified as available for underground mining; 39,140 acres that are included as part of the

223,860 acres that are also classified as available for open pit (surface mining); and 70,820 acres are classified as Multimineral Zone that contain oil shale and other minerals and that are also available for leasing. Lands within the Multimineral Zone would be made available for commercial lease only if the applicant can demonstrate that it would use technologies that allow recovery of oil shale resources without preventing the recovery of, or otherwise destroying, other minerals (e.g., nahcolite and dawsonite). Five of the BLM-issued Research, Development and Demonstration (RD&D) leases are located largely within the acreage identified in the White River RMP as available for oil shale development and are also shown in Figure 2. Each of the RD&D leases includes an initial lease area of approximately 160 acres and an additional associated Preference Right Lease Acreage (PRLA) of approximately 4,960 acres that could be developed if the lease terms are met.

The terms of these leases include, among other items, a requirement for additional National Environmental Policy Act (NEPA) compliance before conversion to a commercial lease, which would include the PRLA acreage. The Oil Shale and Tar Sands PEIS does not represent fulfillment of this requirement, regardless of which Alternative is selected. In order for commercial leasing and/or development of the associated PRLA to take place under any of the Alternatives in this PEIS, additional NEPA compliance would need to be conducted.

The 58,100 acres previously identified in Utah include 48,000 acres divided into five parcels that were designated in the former Book Cliffs RMP as oil shale priority management areas. Of these five areas, three areas totaling 42,000 acres were classified for underground mining and two areas, totaling 6,000 acres, were classified for in situ mining. The remaining approximately 10,100 acres were originally leased for oil shale development in the 1970s as Tracts Ua and Ub. These leases were relinquished in 1985. The sixth BLM RD&D lease and its associated PRLA are located on portions of these two previously leased tracts (see Figure 3).

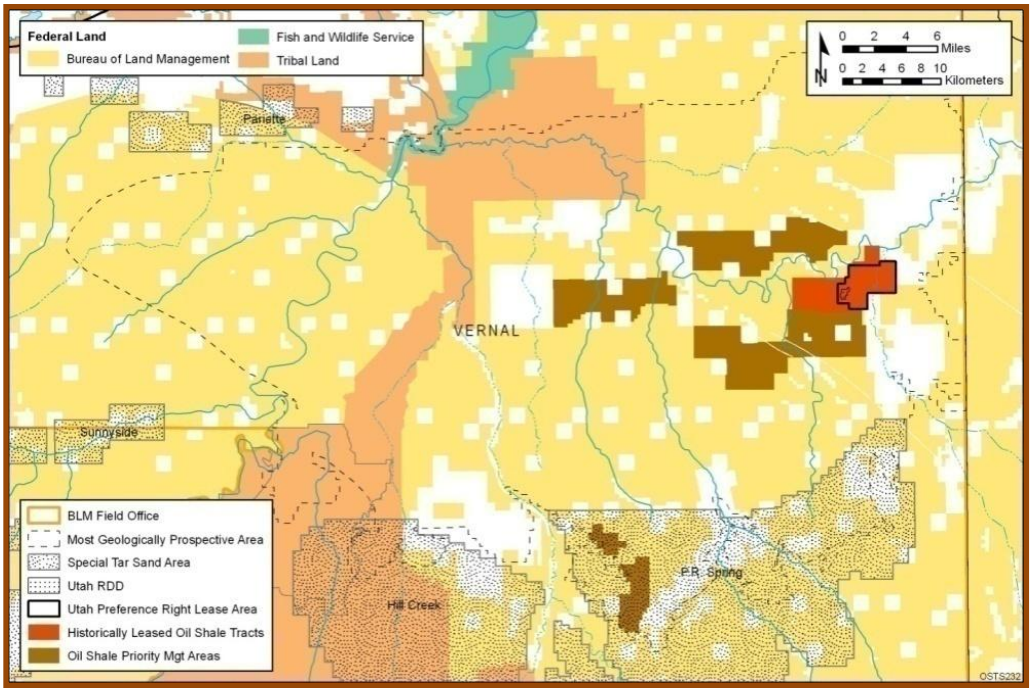

Figure 3: Lands Available for Oil Shale Leasing under Alternative A in Utah[3].

While these areas in both Colorado and Utah have been classified as available for oil shale leasing for many years, there has been little interest in commercial oil shale development. During that time, there were no leasing regulations in place that could be used to guide the processing of any applications or oversee development. The Secretary has discretion to lease tracts for commercial oil shale development without regulations, but regulations would have advantages for potential lessees, the public, and the BLM. The existing White River Resource Area land use plan has a requirement for additional NEPA analysis before a lease could be issued. In October 2008, the Vernal Field Office RMP/EIS did not carry forward the decisions concerning the management of the oil shale resources in the area covered by the Book Cliffs plan. The management decision for oil shale adopted by the Vernal Field Office RMP/EIS ROD does not modify or alter the assumptions concerning development of the RD&D leases or the analysis under Alternative A in the PRMP/FPEIS. This is because the assumption that only the current RD&D lease would be developed in the foreseeable future does not change.

[3] The lands shown in the figure were originally covered by decision in the Book Cliffs RMP. The ROD for the Vernal Field Office RMP/EIS was signed in October 2008 and did not make decisions for oil shale and tar sands resources.

The six RD&D leases that were issued contain terms that allow development of the original leases and could allow development of the associated PRLAs, totaling approximately 30,720 acres. For purposes of analysis and comparison, under Alternative A, it is assumed that each of the leases could reach commercial production utilizing the technologies being tested on the leases and may utilize the whole PRLA leased area. Where the RD&D leases overlay lands classified for open pit (surface), underground, or multimineral development, it is assumed that only the technologies being tested on the individual leases will be utilized in the development. Under this alternative, if an individual RD&D lease holder relinquishes its lease, the area could be leased to another operator consistent with the existing management decisions, such as in the White River RMP (BLM 1997b).

Rationale for Non-Selection: Alternative A was not selected as the Proposed Plan Amendment because it did not fully meet the purpose of and need for the proposed action, nor is it entirely consistent with the mandate established by the Energy Policy Act of 2005 to establish a commercial leasing program for oil shale and tar sands within the most geologically prospective areas in each of the States of Colorado, Utah, and Wyoming. Selection of this alternative would not allow BLM to offer the most geologically prospective areas of the Green River Formation for application for commercial oil shale leasing.

Commercial Oil Shale Program Alternatives

The BLM developed two programmatic allocation alternatives. Under both programmatic alternatives, eight land use plans would be amended to (1) identify the most geologically prospective oil shale resources within each planning unit, (2) designate lands within these most geologically prospective areas available for application for leasing, (3) identify any technology restrictions, (4) establish requirements for future NEPA analyses and consultation activities, and (5) specify that the BLM will consider and give priority to the use of land exchanges to facilitate commercial oil shale development pursuant to Section 369(n) of the Energy Policy Act of 2005. The plans that would be amended include the following:

Colorado:

- Glenwood Springs RMP (BLM 1988, as amended by the 2006 Roan Plateau Plan Amendment [BLM 2006b, 2007a, 2008])
- Grand Junction RMP (BLM 1987)
- White River RMP (BLM 1997b, as amended by the 2006 Roan Plateau Plan Amendment [BLM 2006b, 2007a, 2008])

Utah:

- Book Cliffs RMP (BLM 1985), as revised by the 2008 Vernal Field Office RMP/EIS (BLM 2008a)
- Diamond Mountain RMP (BLM 1994), as revised by the 2008 Vernal Field Office RMP/EIS (BLM 2008a)

- Price River Resource Area MFP, as amended (BLM 1989), as revised by the 2008 Price Field Office RMP/EIS (BLM 2008b)

Wyoming:

- Great Divide RMP (BLM 1990)
- Green River RMP (BLM 1997a, as amended by the Jack Morrow Hills Coordinated Activity Plan [BLM 2006a])
- Kemmerer RMP (BLM 1986).

In both programmatic alternatives, it is recognized that the six existing RD&D leases contain terms and conditions that could allow commercial development of the original leases and the associated PRLAs totaling approximately 30,720 acres to occur.

Certain lands within the most geologically prospective oil shale resource areas are excluded from commercial leasing, under all alternatives, on the basis of existing laws and regulations, Executive Orders (EOs), land use plan designations, and other administrative designations or withdrawals. As a result, commercial leasing is excluded from all designated Wilderness Areas, Wilderness Study Areas (WSAs), and other areas that are part of the National Landscape Conservation System (NLCS) administered by the BLM (e.g., National Monuments, National Conservation Areas (NCAs), Wild and Scenic Rivers (WSRs), and National Historic and Scenic Trails), existing Areas of Critical Environmental Concerns (ACECs) that are currently closed to mineral development, and lands within incorporated town and city limits. Additional areas would be closed and would not be available for future opportunity to lease for commercial development of oil shale resources under both programmatic alternatives. These additional areas include, but not limited to:

- *Mechanically Mineable Trona Area (MMTA).* This area, which is located in the Green River Basin in Wyoming, falls within a portion of the Known Sodium Leasing Area (KSLA) that encompasses the world's largest known trona deposits.[4] Trona leases were issued within this area, and production occurs from a number of underground mines. The MMTA would be excluded from oil shale leasing until technology or other factors exist to allow development of the oil shale resource without jeopardizing the safe operation of underground trona mines.
- *Segments of rivers that the BLM has determined to be potentially eligible for WSR status by virtue of a WSR inventory.* These river segments and a corridor extending at least 0.25 mi from the high water mark on either side of these segments would be excluded from commercial leasing.[5]

[4] Trona is a hydrous sodium carbonate mineral that is refined into soda ash, sodium bicarbonate, sodium sulfite, sodium tripolyphosphate, and chemical caustic soda.

[5] A number of land use plans were undergoing revision, and as part of that process WSR inventories were undertaken. Where a river or river segment was found to be "eligible" for inclusion in the WSR system as part of one of these inventories, the BLM Handbook directs the BLM to protect the lands along the eligible segment until a "suitability" determination is made as part of the land use planning process. If the river or river segment is found to be "non-suitable," the lands along the river then would be available for other uses, but because these segments

- *Historic trails.* Historic trails identified by the BLM Wyoming State Office and a corridor extending at least 0.25 mi on either side of the trail will be excluded from commercial leasing.[6]
- *Monument Valley Management Area.* Oil shale development within this management area, which is located in the Rock Springs Field Office area, is prohibited in the Green River RMP (BLM 1997a). Specifically, the RMP directs that these lands remain withdrawn from oil shale development until a comprehensive study of the area has been conducted, including an assessment of the potential designation of this area as an ACEC on the basis of the need to protect cultural and paleontological resources.
- *Management Area 3, Jack Morrow Hills Planning Area*. In accordance with the Jack Morrow Hills Coordinated Activity Plan (BLM 2006a), extensive restrictions on surface-disturbing activities have been established for Area 3 within the Jack Morrow Hills Planning Area because of the presence of sensitive natural and cultural resources. The portion of Area 3 that overlaps with the most geologically prospective oil shale resources in the Green River Basin is restricted to No Surface Occupancy (NSO) and has been excluded from future leasing on the basis of input from the field office.
- *Expansion Areas around Rock Springs and Green River, Wyoming*. The BLM will not issue leases within the "expansion areas" agreed upon with the cities of Rock Springs and Green River, Wyoming.

Public lands outside of the most geologically prospective area are not being excluded from consideration for leasing for any environmental or other specific reason and could be considered for application for leasing at a later time, which would require a new NEPA analysis. Areas within the most prospectively valuable area that are excluded from consideration for application for leasing, or environmentally and economically sound proposals employing different technologies, could also be considered in the future through evaluation of a plan amendment.

As shown in Figure 4, the areas within the most geologically prospective oil shale areas where the overburden is 0 to 500 ft thick are limited to part of the Uinta Basin in Utah and parts of the Green River and Washakie Basins in Wyoming.

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were excluded from analysis under Alternatives B and C, a land use plan amendment will be required prior to making these segments available for application for commercial oil shale leasing.

6 The centerline of trails mapped in the GIS was used to define the 0.25 mi buffer.

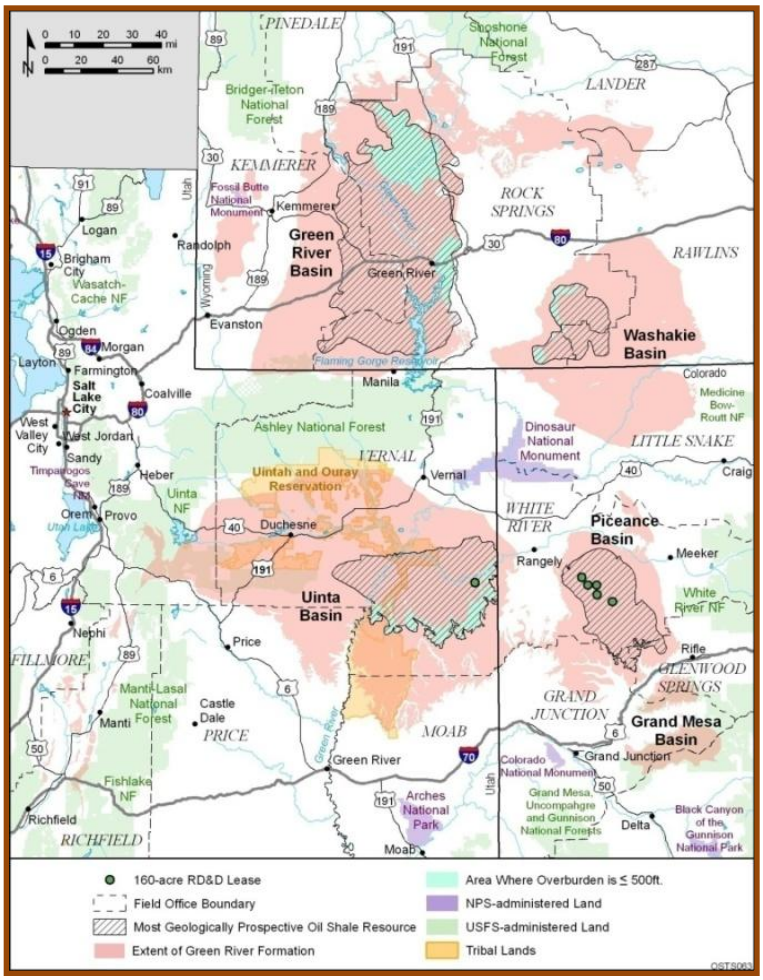

Figure 4: Green River Formation Basins in Colorado, Utah, and Wyoming: the Most Geologically Prospective Oil Shale Resources; the Areas Where the Overburden above the Oil Shale Resources Is ≤500 ft; and Locations of the Six RD&D Projects

The BLM has limited its evaluation of the impacts of surface mining to those areas within the most geologically prospective oil shale areas where the overburden ranges in thickness from 0 to 500 ft. This limitation is based, in large part, on the assumption that 500 ft is about the maximum amount of overburden where surface mining can occur economically, using today's technologies.

In Utah, about 133,194 acres of land within the most geologically prospective oil shale area have an overburden thickness of 0 to 500 ft; all of these lands fall within the former Book Cliffs RMP planning area, as revised by the 2008 Vernal Field Office RMP/EIS ROD. In Wyoming, the corresponding area includes about 380,220 acres within the Green River RMP planning area.

Within the most geologically prospective oil shale area defined in the Piceance Basin in Colorado, the areas where the overburden is 0 to 500 ft thick are very limited, and it would be

difficult to configure a lease tract that would be commercially sustainable for surface mining.[7] The current White River RMP that includes the Piceance Basin in Colorado identifies 39,140 acres that are classified for potential open pit (surface) development, and these lands are open in the no action alternative. In the Proposed Plan Amendment (Alternative B) and Alternative C, land is made available for application for lease for surface mining only in Utah and Wyoming in those areas shown in Figure 4.

A NEPA analysis would be conducted prior to lease issuance. Any information collected as part of the scoping or lease application process would be used to form the basis of the NEPA analysis. During that NEPA review, the BLM would identify and establish appropriate lease stipulations to mitigate anticipated impacts.

In addition, the subsequent approval of project-specific plans of development would require NEPA review to (1) consider site-specific and project-specific factors and (2) identify and require appropriate mitigation measures, as needed to control impacts beyond those established in the lease stipulations. The NEPA review for the plan of development may be incorporated into the NEPA review conducted for the lease application, at BLM's discretion, if adequate, operational data are provided by the applicant(s).

Under both programmatic alternatives (i.e., Alternative B and Alternative C), the BLM would require that the operator conduct commercial development in compliance with existing Federal, state, and local regulatory requirements and established BLM policies. This compliance would include, as appropriate, obtaining and complying with all required permits (e.g., air, water, and waste management) as required by regulatory agencies; operating within the permit constraints; compliance with section 7 of the Endangered Species Act (ESA), which may include completing consultation with the US Fish and Wildlife Service (U.S. FWS); completing consultation with State Historic Preservation Officers (SHPOs), Tribal Historic Preservation Officers, and other consulting parties under Section 106 of the National Historic Preservation Act (NHPA) (P.L. 89-665); and compliance with any other relevant and applicable requirements. Compliance-related conditions would be developed on a project-by-project basis during site-specific analyses.

Under both programmatic oil shale alternatives, in Colorado, lands within the Multimineral Zone identified in the White River RMP (BLM 1997b) would be made available for application for commercial lease only if the applicant can demonstrate that it would use technologies that allow recovery of oil shale resources without preventing the recovery of or otherwise destroying other minerals (i.e., nahcolite and dawsonite). This is consistent with existing provisions in the White River RMP. However, other decisions in the White River RMP relevant to oil shale leasing would be modified under both programmatic alternatives. The decisions that have been modified include the (1) designation of specific areas as available for commercial oil shale leasing, (2) designation of a subset of this area as available for commercial development by surface mining (e.g., open pit), and (3) prohibition of oil shale leasing with the Piceance Creek Dome area.

[7] The areas within the most geologically prospective oil shale areas where the overburden is 0 to 500 ft thick were mapped on the basis of a variety of sources of information. In Colorado, the area was defined on the basis of data published in Donnell (1987). In Utah, the area was mapped based on data provided by the Utah Geological Survey (Tabet 2007). In Wyoming, the area was mapped on the basis of data provided by Wiig (2006 a,b).

In Utah, the decisions in the Book Cliffs RMP identifying lands as available for oil shale leasing were modified under both programmatic alternatives. The decisions that were modified include the (1) designation of specific areas available for commercial oil shale leasing, and (2) identification of specific areas as suitable for development using underground or in situ methods.

With the exception noted in the socioeconomic analysis in the PRMP/FEIS regarding potential impacts on land values that may result from these allocation decisions, the action alternatives presented (mere allocations for planning purposes) would not result in any impacts on the environment or socioeconomic setting of the area under consideration.

The following sections describe the programmatic alternatives. The sections identify the additional leasing exclusions that the BLM has identified for each alternative and the proposed land use plan amendments. The specific land use plan amendments are discussed in greater detail in Attachment – Appendix A.

Alternative B — Oil Shale Proposed Amendments

Alternative B was identified as the BLM's Preferred Alternative in the Draft RMP/EIS. As a result of public comment, internal review, and cooperating agency coordination on the Draft RMP/EIS, Alternative B was clarified and slightly modified to become the Proposed Plan and analyzed in the Final EIS. With minor adjustments and clarifications, it has been selected, in this ROD, as the Approved Plan Amendments (See Appendix A).

Under this ROD approving the Plan Amendments, eight land use plans are amended to designate 1,991,222 acres[8] as available for application for commercial oil shale leasing. Specifically, the lands that are available for application include all lands within the most geologically prospective oil shale areas that are BLM-administered public lands, including split estate lands where the Federal government owns the mineral rights, but excluding lands excluded from all alternatives. The public lands that are available for application for lease in the Plan Amendments (Alternative B) are shown in Figures 5, 6, and 7, for Colorado, Utah, and Wyoming, respectively.

[8] This amount includes the total potential RD&D lease acreage of 30,720 acres.

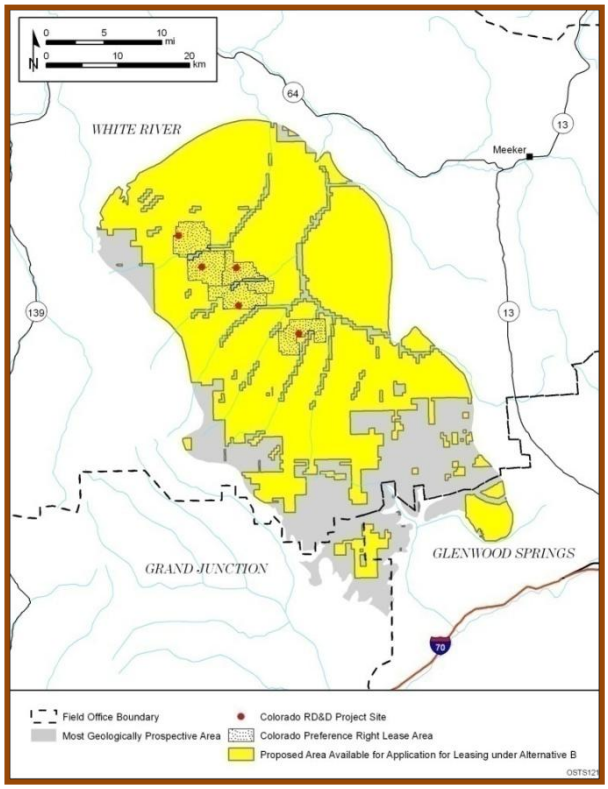

Figure 5: Lands Available for Application for Lease under Alternative B for Commercial Oil Shale Development within the Most Geologically Prospective areas in Colorado.

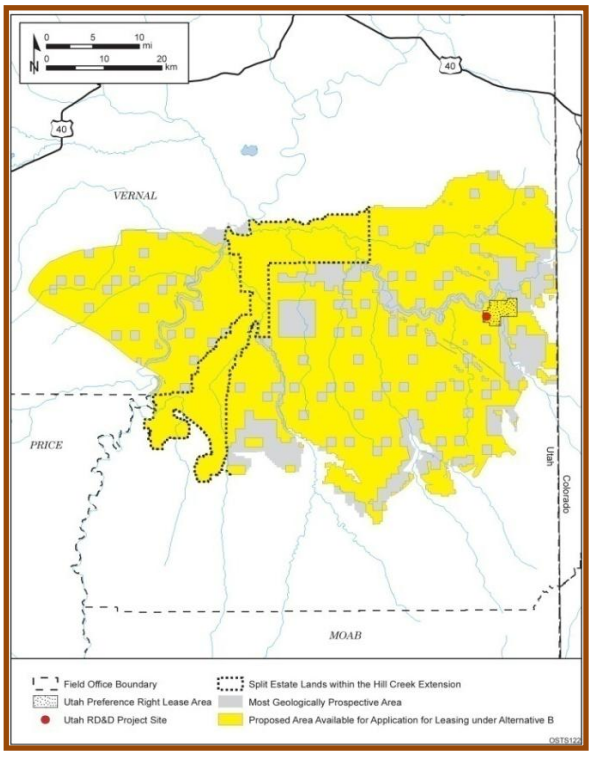

Figure 6: Lands Available for Application for Lease under Alternative B for Commercial Oil Shale Development within the Most Geologically Prospective areas in Utah.

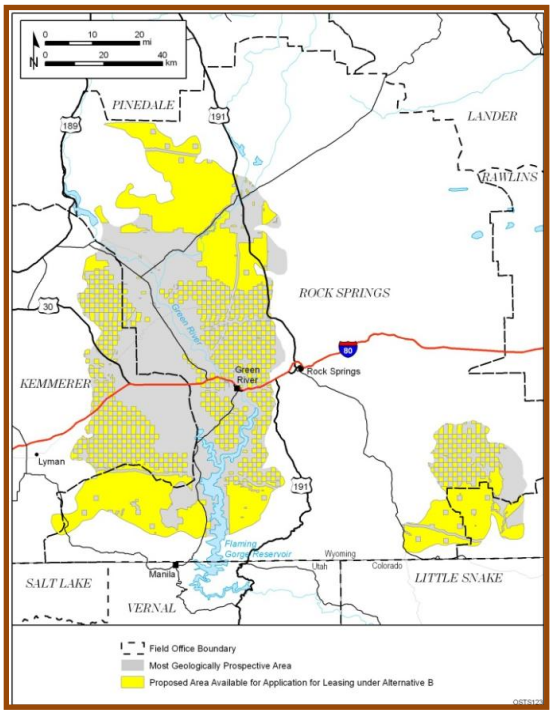

Figure 7 Lands Available for Application for Lease under Alternative B for Commercial Oil Shale Development within the Most Geologically Prospective areas in Wyoming.

Table 2 lists the approximate number of acres of BLM-administered lands available for application for commercial leasing under the Proposed Plan Amendment by State.

Table 2: Estimated Acres Potentially Available in Each State for Application for Leasing for Commercial Oil Shale Development under the Proposed Plan Amendment (Alternative B)[a]

State	BLM-Administered Lands	Split Estate Lands (Federal Minerals only)	Total
Colorado	317,882	41,916	359,798
Wyoming	992,682	7,771	1,000,453
Utah[b]	554,977	75,995	630,971
Total – Alternative B	1,865,542	125,681	1,991,222

[a] Totals may not be exact because of rounding. These estimates were derived from GIS data compiled for the PEIS. The GIS data may contain errors; therefore, these estimates should be considered to be only representative of the proposed leasing area.

[b] The split estate lands in Utah include 57,657 acres of Federal mineral estate within the Hill Creek Extension of the Uintah and Ouray Reservation on which the surface rights is owned by the Ute Indian Tribe.

As shown in Figure 6, split estate lands within the Hill Creek Extension of the Uintah and Ouray Reservation are included in the lands that are available for leasing under Alternative B. These lands total 57,657 acres.

Commercial leases for surface mining projects would be allowed only on those lands in Utah and Wyoming where the overburden is 0 to 500 ft thick. In Utah, under Alternative B, lands available for application for leasing for surface mining projects total about 85,640 acres in the former Book Cliffs RMP planning area. In Wyoming, under Alternative B, these lands total about 248,000 acres in the Green River RMP planning area.

Under the terms of the existing RD&D leases, the Federal government has a commitment to grant the RD&D lessees leases for commercial development within the original 160-acre lease, as well as its PRLA, provided the terms and conditions of the leases are met. As a result, all lands within the PRLAs would be available for issuance of commercial leases to the current RD&D lessees, subject to lease requirements. In Alternative B, the PRLAs for the five RD&D projects in Colorado are entirely within the area proposed to be available for application for commercial leasing. Under the Plan Amendments, if an existing RD&D leaseholder relinquishes its lease, the area would be available for consideration for future leasing.

However, for the Oil Shale Exploration Company (OSEC) RD&D project in Utah, a portion of the PRLA is not identified as available for application for commercial leasing under the Proposed Plan Amendments because of the presence of a potentially eligible WSR, Evacuation Creek. Subsequent to the publication of the PRMP/FEIS, the 2008 Vernal Field Office RMP ROD determined that the river segments of Evacuation Creek were not eligible for inclusion. For commercial leasing to occur on the excluded segments, except as a result of conversion of the RD&D lease, the Vernal Field Office RMP would need to be amended.

Rationale for Selection: Alternative B for oil shale was selected as the Proposed Plan Amendment based on: 1) its consistency with the requirements of the Energy Policy Act of 2005, 2) its balanced use and protection of resources, 3) the FPEIS's analysis of potential environmental impacts, and 4) the comments and recommendations from cooperating agencies and the public.

Alternative B is structured to be consistent with the congressional mandate of the Energy Policy Act to emphasize the "most geologically prospective lands in Colorado, Utah and Wyoming" as available for application for leasing. Alternative B, therefore, identifies and offers the most geologically prospective acreage (based on grade and thickness of the oil shale deposits) of the Green River Formation located in the Piceance, Uinta, Green River, and Washakie Basins of Colorado, Utah, and Wyoming. As compared with Alternative C, Alternative B makes more Federal oil shale available for application, and provides for fewer fragmented tracts. Alternative B also provides for more contiguous tracts that could be configured for economically and technically feasible extraction or recovery of the resources. Alternative B would also allow access to more of the most geologically prospective oil shale lands, particularly in Colorado.

Unlike Alternative C, which excludes lands based on existing management decisions for oil and gas development, Alternative B provides the decisionmaker with the discretion to balance the oil shale use and protection of resources on the public lands during subsequent site-specific NEPA analysis. This balanced approach is consistent with FLPMA principles of "multiple use," and

"sustained yield." The requirement to perform future NEPA analyses and to comply with other environmental laws allows the decisionmaker to optimize the recovery of energy resources, to establish appropriate lease stipulations to mitigate anticipated impacts, or to fully protect a resource or resource value by choosing not to offer an area for lease at any particular time. Even if some technologies may not allow mining of some tracts to proceed without unacceptable impacts to other resource values, Alternative B would allow the agency the opportunity to choose to offer leases when a technology is proposed that can be used compatibly with the resource values in question. This is consistent with the comments that supported a viable and sustainable commercial oil shale leasing program, while ensuring that any impacts to sensitive resources or resource values are mitigated to any commercial development. It is also consistent with the planning decisions for other mineral resources for these parcels which authorize leasing subject to restrictive conditions, rather than preclude leasing altogether.

Alternative B does, however, exclude certain lands within the most geologically prospective oil shale areas under the basis of existing laws and regulations, executive orders and other administrative designations or withdrawal. These include WSAs, National Monuments, WSRs, NCAs, and existing ACECs that are closed to mineral development.

Alternative C

Alternative C is similar to the Proposed Plan Amendments (Alternative B) except that additional lands are excluded from the area to be designated as available for application for commercial leasing. Under Alternative C, a total of 830,296[9] acres would have been designated as available for application for commercial oil shale leasing. The lands that would be available for application under Alternative C include some of the lands that are available under the Proposed Plan Amendments, but exclude lands that are identified as requiring special management or resource protection in existing land use plans.

The lands were identified based on existing land use plan decisions; the possible impacts associated with commercial oil shale development were also considered. Based on these impact analyses, described in Chapter 4 in the PRMP/FPEIS, it was determined that commercial oil shale development could be in conflict with existing land use plan decisions that require surface-disturbance restrictions or seasonal limitations on activities in order to adequately protect a specific resource. Alternative C excludes from application for leasing all lands where such surface-disturbance and seasonal limitations are in place to protect known sensitive resources. The acreage so excluded were lands where stipulations for no surface disturbance or seasonal limitations are in place for oil and gas leasing. Under this alternative, a priority is placed on protecting known sensitive resources within each field office by excluding these lands from application for leasing. The lands that would be available for application for leasing under Alternative C are shown in Figures 8, 9, and 10 for Colorado, Utah, and Wyoming, respectively.

[9] This amount includes the total potential RD&D lease acreage of 30,720 areas.

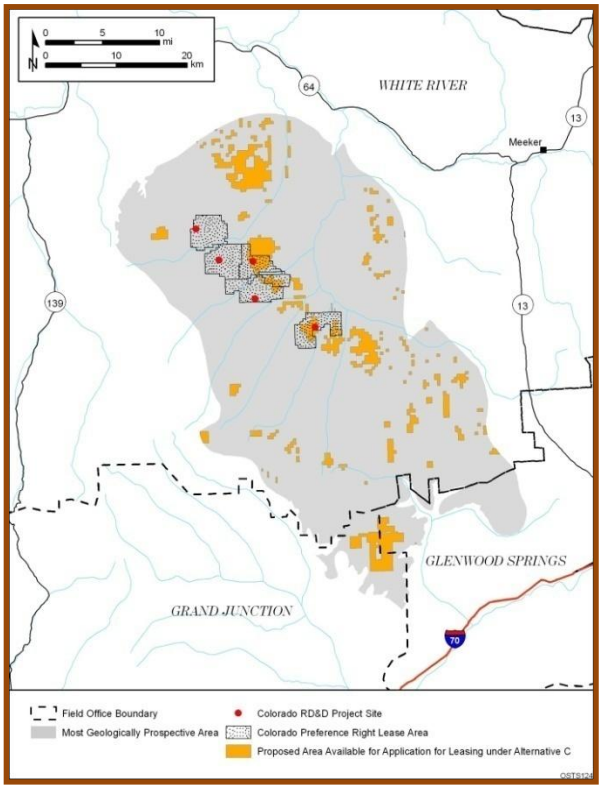

Figure 8: Lands Available for Application for Leasing under Alternative C for Commercial Oil Shale Development within the Most Geologically Prospective Areas in Colorado.

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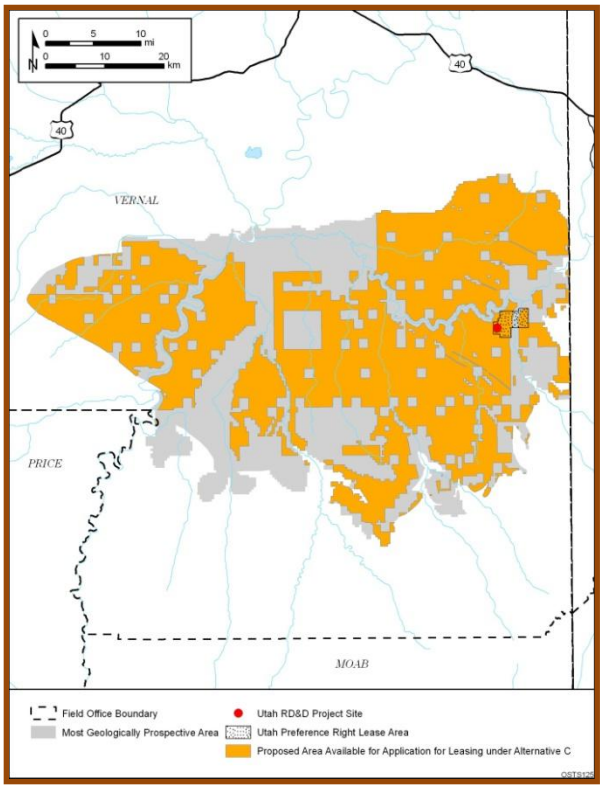

Figure 9: Lands Available for Application for Leasing under Alternative C for Commercial Oil Shale Development within the Most Geologically Prospective Areas in Utah.

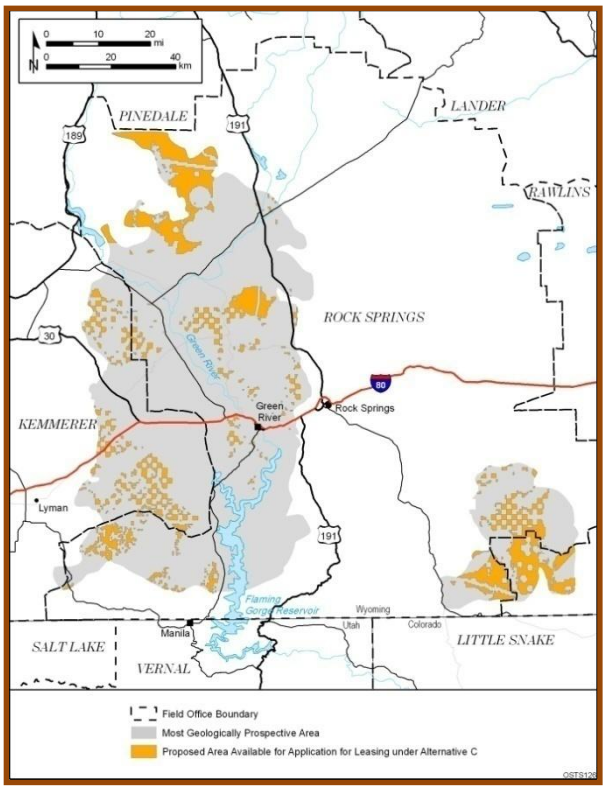

Figure 10: Lands Available for Application for Leasing under Alternative C for Commercial Oil Shale Development within the Most Geologically Prospective Areas in Wyoming.

Table 3 lists, by state, the approximate number of acres of BLM-administered lands available for application for commercial leasing under Alternative C.

Table 3: Estimated Acres Potentially Available in Each State for Application for Leasing for Commercial Oil Shale Development under Alternative C[a]

State	BLM-Administered Lands	Split Estate Lands (Federal minerals only)	Total
Colorado	26,109	14,217	40,326
Wyoming	297,434	2,077	299,511
Utah	472,443	18,017	490,460
Total – Alternative C	795,986	34,311	830,297

[a] Totals may not be exact because of rounding. These estimates were derived from GIS data compiled for the PEIS. The GIS data may contain errors; therefore, these estimates should be considered to be only representative of the proposed leasing area.

Table 4 identifies the types of stipulations and restrictions in place for oil and gas leasing in each state that are being used to identify those lands that would not be available for application for leasing for commercial oil shale development under Alternative C.

Table 4: Resources Covered by Stipulations and Restrictions in Place for Oil and Gas Leasing in Each State That Are Being Used to Identify Lands Not Available for Application for Leasing under Alternative C
Colorado
Slopes and fragile/erosive soils
Riparian zones and wetlands
Sage grouse leks and nesting habitat
Raptor nests, roosts, fledgling habitat, and concentration areas
Wildlife habitat[a]
Colorado River cutthroat trout habitat
Listed, proposed, or candidate threatened or endangered and BLM-designated sensitive species
Sensitive plants and remnant vegetation associations
Wild horses and wild horse management areas
Visual Resource Management (VRM) Class II areas
ACECs
Paleontological and cultural resources
Utah
Erosive soils
Floodplains, watersheds, and live water
Sage grouse leks and nesting habitat
Raptor nests and habitat
Wildlife habitat[a]
Black-footed ferret habitat
Special status plants
ACECs

Table 4: Resources Covered by Stipulations and Restrictions in Place for Oil and Gas Leasing in Each State That Are Being Used to Identify Lands Not Available for Application for Leasing under Alternative C
Paleontological resources
Other[b]
Wyoming
Slopes and fragile/erosive soil
Sage grouse and greater sage grouse leks and nesting habitat
Raptor nests and concentration areas
Wildlife habitat[a]
Sensitive species
VRM Class I and II areas
Historic trails
ACECs
Cultural resources
Other[b]

[a] Wildlife habitat includes a combination of winter range, crucial winter range, summer range, and calving areas for antelope, deer, elk, and moose, as well as seclusion areas for other wildlife.

[b] Other resources include Special Management Areas (SMAs), recreation areas, and areas restricted from leasing for reasons not specified in the GIS data.

As shown in Figures 8, 9, and 10 and reflected in Table 3, a large amount of land (i.e., 1,160,926 acres) available for application for leasing under the Proposed Plan Amendments (Alternative B) is excluded under Alternative C. In addition, particularly in Colorado and Wyoming, a large portion of the lands available for application for leasing is composed of relatively small, isolated tracts of land. These factors could result in limiting the amount of commercial oil shale development to some level below that which might be realized under the Proposed Plan Amendments (Alternative B).

Also, commercial leases for surface mining projects would be allowed only in Utah and Wyoming on those lands where the overburden is 0 to 500 ft thick. In Utah, under Alternative C, lands available for application for leasing for surface mining projects total about 46,900 acres in the former Book Cliffs RMP planning area. In Wyoming, under Alternative C, these lands total about 68,200 acres in the Green River RMP planning area.

In Alternative C, portions of three of the five PRLAs for the Colorado RD&D leases are not identified as available for application for commercial leasing. These include portions of the areas associated with the Chevron, EGL, and Shell Site 2 RD&D projects. For the other two Colorado RD&D projects, Shell Sites 1 and 3, none of the PRLAs are within the area identified as available for application for commercial leasing.

Under the terms of the RD&D program, the Federal government has a commitment to grant the RD&D leaseholders leases for commercial development that include the RD&D acreage and that within the associated PRLAs, provided that all terms and conditions of the leases are met. As a result, all lands within the PRLAs would be subject to commercial leasing to the current RD&D lessees, subject to their lease requirements. Should such lease conversion occur on lands excluded by Alternative C, prior to any commercial oil shale development, the BLM would need to review the specific land use plans to determine whether the development conforms to the plan or whether plan maintenance or an amendment is required. The Federal government is not under an obligation to grant leases for commercial development within the currently leased RD&D areas to any other applicants. Under this alternative, if existing RD&D lessees relinquish their leases, only 8,205 acres of the 30,720 acres potentially included in the current RD&D leases (i.e., 160 acre RD&D area plus 4960 PRLA acres per lease) would be available for application for future leasing. The areas that would be available for lease are shown in Figures 8 and 9.

Rationale for Non-Selection: Alternative C was not selected as the Proposed Plan Amendment because the alternative would not make the "most geologically prospective lands in Colorado, Utah and Wyoming" as available for application for leasing. Thus it is not fully consistent with the mandate of the Energy Policy Act of 2005. Much of the most geologically prospective acreage would be excluded under Alternative C; in particular areas which are in close proximity to three of the six RD&D leases would be excluded. In addition, this unreasonably fragments the area that would be available for application, resulting in parcels that are unlikely to be explored, leased, or developed. This could be an impediment to sound and rational development of the resource and can reduce the economic return to the public. If oil shale resources are by-passed because of the exclusions in Alternative C, that could also limit the benefits to the nation from exploitation of a domestic unconventional energy source.

Selection of alternative C precipitously limits or restricts the decisionmaker's discretion to balance oil shale use and the protection of resources or resource values, in accordance with FLPMA's principal of "multiple use." Although as presently being researched, in situ oil shale extraction would have many impacts similar to those of oil and gas development, exclusion of areas based on existing management prescriptions (e.g., no surface disturbance or seasonal limitation that are in place for oil and gas leasing) unnecessarily speculates upon the nature and degree of impacts that would be caused by future oil shale development. It would be premature to eliminate areas prior to site-specific analysis based on factors that are not known now, but that would be known at the leasing or operation permitting stages, such as location, timing and type of oil shale technology, that may show that these resources could be adequately protected through mitigation. Unlike Alternative B, Alternative C does not give the decisionmaker the necessary discretion to optimize the recovery of energy resources, establish appropriate lease stipulations to mitigate anticipated impacts, or to fully protect a resource or resource value by choosing not to offer an area for lease.

Tar sands are sedimentary rocks containing bitumen, a heavy hydrocarbon complex. Lighter, more volatile hydrocarbons once present in these rocks have escaped to the environment, leaving the heavier, less volatile bitumen in place. Because of the very viscous nature of the bitumen, tar sands cannot be processed by normal petroleum production techniques.

More than 50 tar sands deposits occur in Utah. For the tar sands resources, the PRMP/FEIS study area includes those locations designated as Special Tar Sand Areas (STSAs) by Congress in the Combined Hydrocarbon Leasing Act of 1981 (P.L. 97-78). Eleven STSAs were identified in Utah (Figure 11): Argyle Canyon-Willow Creek (hereafter referred to as Argyle Canyon), Asphalt Ridge-Whiterocks and Vicinity (hereafter referred to as Asphalt Ridge), Circle Cliffs East and West Flanks (hereafter referred to as Circle Cliffs), Hill Creek, Pariette, P.R. Spring, Raven Ridge-Rim Rock and Vicinity (hereafter referred to as Raven Ridge), San Rafael Swell, Sunnyside and Vicinity (hereafter referred to as Sunnyside), Tar Sand Triangle, and White Canyon. The total acreage of the study area is approximately 1,026,000 acres. The tar sands resources within the defined study areas are located within the jurisdiction of separate BLM administrative units. These units include the Moab, Monticello, Price, Richfield, and Vernal Field Offices and the Grand Staircase – Escalante National Monument (GSENM) in Utah. With the exception of the GSENM,[10] the FEIS evaluated the alternatives that would amend the existing BLM land use plans.

Limited data are available on many of these deposits, and most of the known bitumen occurs in just a few of the deposits. The deposits that are being evaluated in this PEIS are those classified in the 11 sets of geologic reports (minutes) prepared by the USGS in 1980 (USGS 1980a–k) and formalized by Congress in the Combined Hydrocarbon Leasing Act of 1981 (P.L. 97-78).[11] The 11 STSAs, which define the tar sands study area, are shown in Figure 11.

[10] Like other National Monuments, the GSENM in Utah, which overlies the Circle Cliffs STSA, will be excluded from future leasing for tar sands development. However, at this time, there are two pending conversion leases within the GSENM that could potentially be converted to CHLs and developed under the Combined Hydrocarbon Leasing Program. For more information about the Combined Hydrocarbon Leasing Program and pending conversion leases for tar sands development, see Section 1.4.2. Because there will be no future tar sands leasing within the GSENM, the impacts of commercial tar sands leasing and development in the Circle Cliffs STSA are not evaluated in this PEIS.

[11] The boundaries of the designated STSAs were determined by the Secretary of the Interior's orders of November 20, 1980 (45 FR 76800–76801), and January 21, 1981 (46 FR 6077–6078).

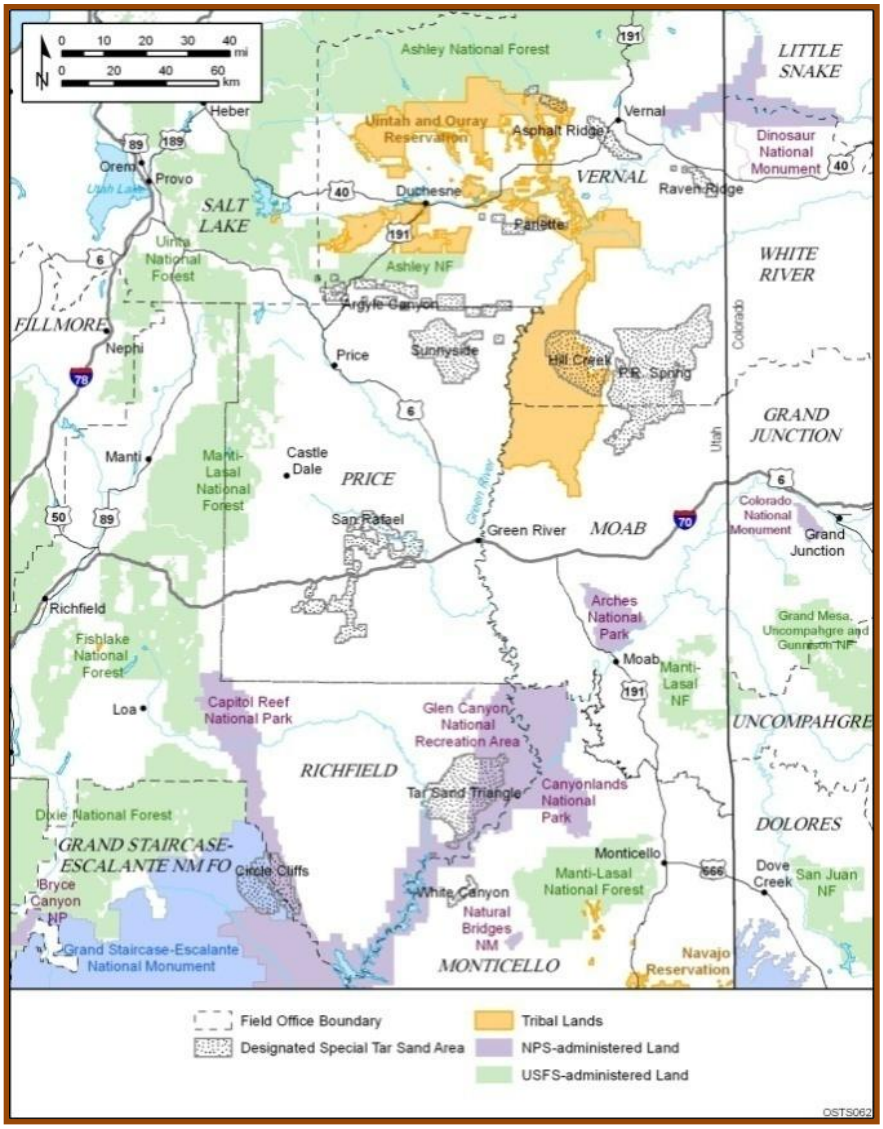

Figure 11: Special Tar Sands Areas in Utah

Table 5 lists the STSAs, along with their total size in acres and the number of acres of BLM-administered and split estate lands within each STSA. These STSAs are considered to be the most geologically prospective areas for tar sands development.

Table 5: Total Size in Acres of the 11 STSAs and Acres of BLM-Administered and Split Estate Lands within Each STSA[a,b]

STSA	Total Acres	BLM-Administered Lands	Split Estate Lands (Federal mineral only)
Argyle Canyon	22,259	1,224	11,869
Asphalt Ridge	39,151	5,323	128
Circle Cliffs[c]	91,303	51,226	6,707
Hill Creek[d]	106,795	19,923	36,583
Pariette	22,622	12,337	78
P.R. Spring	273,922	184,558	8,192
Raven Ridge	16,533	14,352	16
San Rafael Swell	130,737	115,667	0
Sunnyside	157,406	78,657	18,575
Tar Sand Triangle	155,049	83,040	0
White Canyon	10,490	8,050	0
Total	1,026,266	574,357	82,148

[a] Totals may not be exact because of rounding. These estimates were derived from GIS data compiled for the PEIS analyses. The GIS data may contain errors; therefore, these estimates should be considered to be only representative of the size of the STSAs and the distribution of BLM-administered and split estate lands.

[b] Split estate lands include areas where the Federal government owns, and the BLM administers, the subsurface mineral rights, but the surface estate is owned by tribes, states, or private parties.

[c] The Circle Cliffs STSA is included for information purposes only; it has been excluded from consideration for being designated as open to application for leasing in this PEIS. The BLM-administered lands fall entirely within the GSENM.

[d] The split estate lands in the Hill Creek STSA include 35,472 acres of split estate lands within the Hill Creek Extension of the Uintah and Ouray Reservation on which the surface rights are owned by the Ute Indian Tribe.

Although no tar sands development is currently taking place on public lands in Utah, in the mid-1980s, a number of CHLs were issued in the Pariette and P.R. Spring STSAs under the authority of the Combined Hydrocarbon Leasing Act (P.L. 97-78). These include four leases in the Pariette STSA and two leases in the P.R. Spring STSA; these leases remain in existence. Also in the mid-1980s, a number of operators holding oil and gas leases or tar sands claims within designated STSAs applied to convert their leases to CHLs. In most instances, the conversion of these leases has not been completed; thus, a number of pending conversion applications remains within the study area, specifically within the Circle Cliffs, Tar Sand Triangle, and P.R. Spring

STSAs.[12] The BLM is currently engaged in adjudication of these leases.[13] Tar sands deposits outside the areas designated by the Secretary in the 11 sets of minutes are not available for leasing under the CHL Program, but are available for development under a conventional oil and gas lease.

Potential tar sands development could occur on the existing CHLs or on pending conversion leases should they be converted to CHLs. However, because there has been no tar sands development to date on any of the CHLs and no project proposals have been submitted, the BLM cannot reasonably foresee any development of tar sands on public lands within the STSAs over the next 20 years under the CHL Program.

Under both programmatic tar sands alternatives, four land use plans in Utah would be amended to (1) designate lands within the STSAs available for application to lease, (2) stipulate requirements for future NEPA analyses and consultation activities, and (3) specify that the BLM will consider and give priority to the use of land exchanges to facilitate commercial tar sands development pursuant to Section 369(n) of the Energy Policy Act of 2005. The plans that would be amended to address commercial tar sands leasing and development include the following:

- Book Cliffs RMP (BLM 1985), as revised by the 2008 Vernal Field Office RMP/EIS (BLM 2008a)
- Diamond Mountain RMP (BLM 1994, as revised by the 2008 Vernal Field Office RMP/EIS (BLM 2008a);
- Henry Mountain MFP (BLM 1982, as revised by the 2008 Richfield Field Office RMP/EIS (BLM 2008c);
- Price River Resource Area MFP, as amended (BLM 1989, as revised by the 2008 Price Field Office RMP/EIS (BLM 2008b);
- San Rafael Resource Area RMP (BLM 1991a, as revised by the 2008 Price Field Office RMP/EIS (BLM 2008b); and
- San Juan Resource Area RMP (BLM 1991b, as revised by the 2008 Richfield and Monticello Field Office RMPs/EISs (BLM 2008c and 2008d).
-

Public lands outside of the STSAs are not being excluded from consideration for leasing for any environmental or other specific reason and could be considered for application for leasing at a later time but would require consideration in a new NEPA analysis and a land use plan amendment before leasing could be authorized. Areas within the STSAs that are excluded from consideration for application for leasing, or environmentally and economically sound proposals

[12] While the Circle Cliffs STSA is a designated STSA, the BLM-administered portion of it falls entirely within the GSENM and has been excluded from consideration for being designated as open to application for leasing in this PEIS.

[13] Decisions in this ROD regarding the availability of lands within the STSAs for future commercial leasing and the constraints under which such future leases would be issued would not affect the existing CHLs or any of the pending applications that are converted to CHLs.

employing different technologies, could also be considered in the future in a future plan amendment.

Alternative A — No Action Alternative, Continuation of Current Management

Under this alternative for tar sands, the BLM assumed that there would be no commercial leasing or development of tar sands on public lands. Although a number of CHLs were issued in the mid-1980s (and there are additional pending applications to convert oil and gas leases or tar sands claims to CHLs), there has been no tar sands development on public lands in the last 20 years or more. Furthermore, at the time of the preparation of the FPEIS, no commercial tar sands project proposals were submitted to the BLM. Based on this history, the BLM has determined that it is unlikely that commercial tar sands development would occur under the existing CHL Program. Under Alternative A, land use plans would not be amended to allow for leasing for commercial tar sands development under any program other than the CHL Program. In October 2008, the Vernal Field Office RMP/EIS did not carry forward the decisions concerning the management of the oil shale resources in the area covered by the Book Cliffs plan. The management decision for tar sands adopted by the Vernal Field Office RMP/EIS ROD does not modify or alter the assumptions concerning development of the RD&D leases or the analysis under Alternative A in the PRMP/FPEIS. This is because the assumption that only the current RD&D lease would be developed in the foreseeable future does not change.

Rationale for Non-Selection: Alternative A was not selected as the Proposed Plan Amendment because it did not meet the purpose of and need for the proposed action, nor is it consistent with the mandate established by the Energy Policy Act of 2005 to establish a commercial leasing program for tar sands resources. Under this alternative, BLM would not amend its plans to open areas for commercial tar sands leasing and development.

Commercial Tar Sands Program Alternatives

There are two separate programmatic alternatives, Alternatives B and C, consisting of different management approaches to future commercial tar sands leasing. Under each programmatic alternative, the BLM proposes to make certain lands within the STSAs available for application for commercial leases. With the exception noted in the socioeconomic analysis in the PRMP/FEIS regarding potential impacts on land values that may result from these allocation decisions, the action alternatives presented would not result in any impacts on the environment or socioeconomic setting of the area under consideration. The BLM will also consider and give priority to the use of land exchanges where appropriate and feasible to consolidate land ownership and mineral interests within the STSAs.

Under both alternatives, additional NEPA analyses would be conducted prior to the issuance of commercial leases. In addition, site-specific NEPA analyses would be conducted during evaluation and approval of plans of development during the project development phase. These

site-specific analyses, which potentially could be combined into a single NEPA evaluation, would identify potential project-specific impacts and define appropriate lease stipulations and required mitigation measures. Potential applicable mitigation measures would be applied during the site-specific analyses, as appropriate.

Certain lands within the STSAs are excluded from commercial leasing under all alternatives, on the basis of existing laws and regulations, E.O.s, land use plan designations, and other administrative designations or withdrawals. As a result, commercial leasing is excluded from all designated Wilderness Areas, WSAs, and other areas that are part of the NLCS administered by the BLM (e.g., National Monuments, NCAs, WSRs, and National Historic and Scenic Trails). Leasing also would be excluded from all existing ACECs and lands within incorporated town and city limits.

The BLM has also determined that additional areas would be closed and would not be available for future opportunity to lease for commercial development of tar sands resources under both programmatic alternatives. These additional areas include: 1) Circle Cliffs STSA. Most of the Circle Cliffs STSA falls entirely within the GSENM and Capitol Reef National Park. The issuance of new leases for mineral development within each of these units is prohibited. Also, a small portion of the Circle Cliffs STSA underlies the Glen Canyon National Recreation Areas (NRA); this area is part of the "Natural Zone" within which mineral leasing and development are prohibited, and 2) Segments of rivers that have been determined to be potentially eligible for WSR status by virtue of a WSR inventory. These river segments and a corridor extending at least 0.25 mi on either side of these segments would be excluded from commercial leasing[14].

Leasing would occur as set forth in 43 CFR Part 3140. The BLM anticipates that it will need additional information about potential technologies for, and impacts from, commercial production of tar sands in order to complete an analysis under NEPA for issuing leases or approving plans of developments. That information does not presently exist and would likely need to come from the industry before the BLM would proceed with leasing or approval of operations.

Under both programmatic alternatives, the BLM would ensure that the operator conducts commercial development in compliance with existing Federal, state and local regulatory requirements and established BLM policies. That compliance would include, as appropriate, obtaining all permits (e.g., air, water, and waste management) as required by regulatory agencies; operating within the permit constraints; compliance with section 7 of the ESA, which may include completing consultation with the U.S. FWS; completing consultation with SHPOs, Tribal Historic Preservation Officers, and other consulting parties under Section 106 of the NHPA; and compliance with any other relevant and applicable requirements. Compliance-related conditions would be developed on a project-by-project basis during site-specific analyses.

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[14] A number of land use plans were undergoing revision, and as part of that process WSR inventories were undertaken. Where a river or river segment was found to be "eligible" for inclusion in the WSR system as part of one of these inventories, the BLM Handbook directs the BLM to protect the lands along the eligible segment until a "suitability" determination is made as part of the land use planning process. If the river or river segment is found to be "non-suitable," the lands along the river then would be available for other uses, but because these segments were excluded from analysis under Alternatives B and C, a land use plan amendment will be required prior to making these segments available for application for commercial tar sands leasing.

Under both programmatic tar sands alternatives, four land use plans in Utah would be amended to (1) designate lands within the STSAs available for application to lease, (2) stipulate requirements for future NEPA analyses and consultation activities, and (3) specify that the BLM will consider and give priority to the use of land exchanges to facilitate commercial tar sands development pursuant to Section 369(n) of the Energy Policy Act of 2005.

Public lands outside of the STSAs are not being excluded from consideration for leasing for any environmental or other specific reason and could be considered for application for leasing at a later time, but would require consideration in a new NEPA analysis and a land use plan amendment before leasing could be authorized. Areas within the STSAs that are excluded from consideration for application for leasing in the current PEIS, or environmentally and economically sound proposals employing different technologies, could also be considered in a future plan amendment.

The following sections describe the programmatic alternatives. The sections identify the additional leasing exclusions that the BLM has identified for each alternative and the proposed land use plan amendments. The specific land use plan amendments are discussed in greater detail in Attachment – Appendix A.

Alternative B — Commercial Tar Sands Program, Proposed Plan Amendments

Alternative B was identified as the BLM's Preferred Alternative in the Draft RMP/EIS. This alternative represents the mix and variety of actions that, in the opinion of BLM, best resolve the issues and management concerns in consideration of all values and programs. As a result of public comment, internal review, and cooperating agency coordination on the Draft RMP/EIS, Alternative B was clarified and slightly modified to become the Proposed Plan Amendment and analyzed in the Final EIS. With minor adjustments and clarifications, upon signing of this ROD, it is now the Approved Plan Amendment.

Under Alternative B, the BLM is designating a total of 431,224 acres available for application for commercial tar sands leasing by amending four land use plans. Specifically, the lands that would be available for application include all BLM-administered lands within the STSAs, including split-estate lands where the Federal government owns the mineral rights. Figure 12 shows the lands that would be available for application for lease.

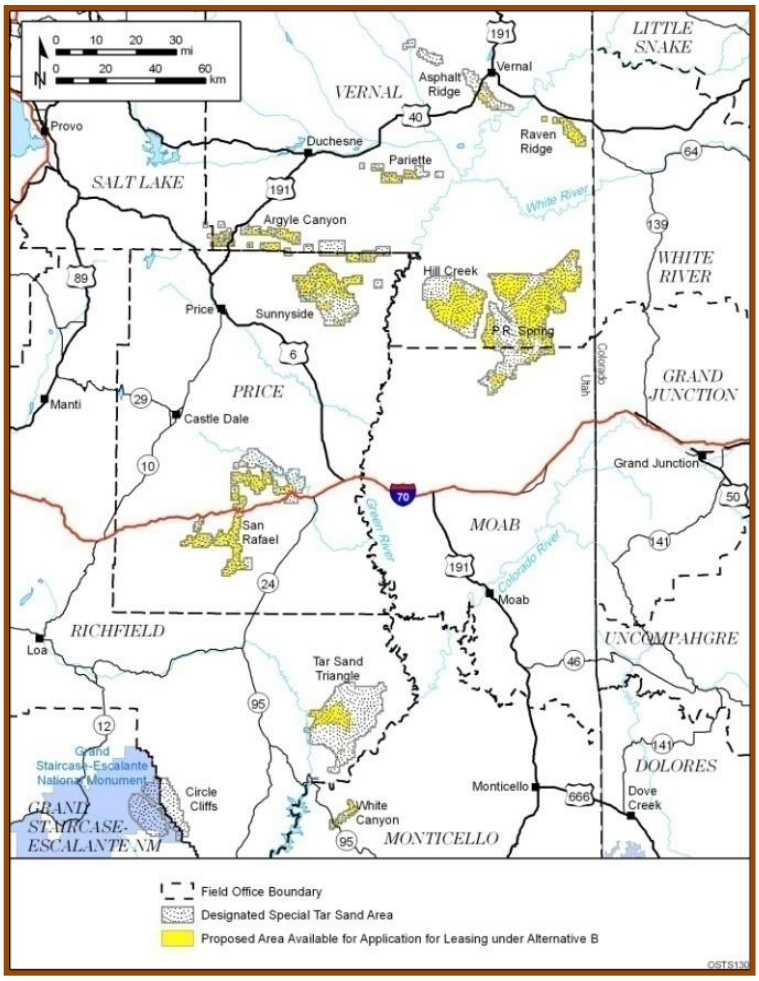

Figure 12: Lands Available for Application for Leasing under Alternative B for Commercial Tar Sands Development within the STSAs in Utah

Table 6 lists the approximate number of acres available for application for commercial leasing under Alternative B by STSA. As indicated in Table 6, split estate lands within the Hill Creek Extension of the Uintah and Ouray Reservation where the surface estate is owned by the Tribes and the minerals are owned by the Federal government, are included in the lands proposed to be available for leasing under Alternative B. These lands encompass 35,472 acres. Under Alternative B, land use plans in the study area would be amended to adopt the conditions and constraints discussed in the previous section.

Table 6: Estimated Acres Potentially Available under Alternative B for Application for Leasing in Each STSA for Commercial Tar Sands Development[a]

STSA	BLM-Administered Lands	Split Estate Lands (Federal minerals only)	Total Acres
Argyle Canyon	1,022	10,204	11,226
Asphalt Ridge	5,310	125	5,435
Circle Cliffs[b]	0	0	0
Hill Creek[c]	19,923	36,583	56,506
Pariette	10,083	78	10,161
P.R. Spring	145,922	7,081	153,003
Raven Ridge	14,348	16	14,364
San Rafael Swell	70,475	0	70,475
Sunnyside	61,093	17,023	78,116
Tar Sand Triangle	24,938	0	24,938
White Canyon	7,001	0	7,001
Total – Alternative B	360,115	71,110	431,224

[a] Totals may not be exact because of rounding. These estimates were derived from GIS data compiled for the PEIS analyses. The GIS data may contain errors; therefore, these estimates should be considered to be only representative of the proposed leasing area.

[b] Leasing for commercial tar sands development in the Circle Cliffs STSA is excluded under all alternatives because it falls entirely within the GSENM and units managed by the National Park Service (NPS) on which mineral leasing and development are prohibited.

[c] The split estate lands in the Hill Creek STSA include 35,472 acres of Federal mineral estate within the Hill Creek Extension of the Uintah and Ouray Reservation on which the surface is owned by the Ute Indian Tribe.

Rationale for Selection: Alternative B for tar sands was selected as the (Proposed Plan Amendment based on: 1) its consistency with the requirements of the Energy Policy Act of 2005, 2) its balanced use and protection of resources, 3) the PEIS's analysis of potential environmental impacts, and 4) the comments and recommendations from cooperating agencies and the public.

Alternative B is structured to be consistent with the congressional mandate of the Energy Policy Act to emphasize the "most geologically prospective lands in Colorado, Utah and Wyoming" as available for application for leasing. Alternative B, therefore, identifies and offers those locations designated as STSAs by Congress in the Combined Hydrocarbon Leasing Act of 1981. As compared with Alternative C, Alternative B makes more Federal tar sands available for

application, and provides for fewer fragmented tracts. Alternative B also provides for more contiguous tracts that could be configured for economically and technically feasible extraction or recovery of the resources.

Unlike Alternative C, which excludes lands based existing management decisions for oil and gas development, Alternative B provides the decisionmaker with the discretion to balance the tar sands use and protection of resources on the public lands during subsequent site-specific NEPA analysis. This balanced approach is consistent with FLPMA principles of "multiple use," and "sustained yield." The requirement to perform future NEPA analyses and to comply with other environmental laws allows the decisionmaker to optimize the recovery of energy resources, to establish appropriate lease stipulations to mitigate anticipated impacts, or to fully protect a resource or resource value by choosing not to offer an area for lease at any particular time. Even if some technologies may not allow mining of some tracts to proceed without unacceptable impacts to other resource values, Alternative B would allow the agency the opportunity to choose to offer leases when a technology is proposed that can be used compatibly with the resource values in question. This is consistent with the comments that supported a viable and sustainable commercial tar sands leasing program, while ensuring that any impacts to sensitive resources or resource values are mitigated to any commercial development. It is also consistent with the planning decisions for other mineral resources for these parcels, which authorize leasing subject to restrictive conditions, rather than preclude leasing altogether.

Alternative B does, however, exclude certain lands within the STSAs under the basis of existing laws and regulations, executive orders and other administrative designations or withdrawal. These include WSAs, National Monuments, WSRs, NCAs, and existing ACECs that are closed to mineral development. Additionally, the Circle Cliffs STSA was excluded, where most of the acreage falls within GSENM and the Glen Canyon National Recreation Areas, as well as the small portion, which underlies the Capitol Reef National Park.

Alternative C

Alternative C is similar to Alternative B except that additional lands are excluded from the area made available for application for commercial leasing. Under Alternative C, the BLM identified a total of 229,038 acres available for application for commercial tar sands leasing. The lands that are available for application under Alternative C include some of the lands that are available under Alternative B, but exclude lands that are identified as requiring special management or resource protection in existing land use plans.

To identify those lands that would be excluded based on existing land use plan decisions, the BLM considered the possible impacts associated with individual commercial tar sands development projects. Based on these impact analyses, it was determined that commercial tar sands development could be in conflict with existing land use plan decisions that require surface-disturbance restrictions or seasonal limitations on activities in order to adequately protect a specific resource. It was decided to exclude from Alternative C all lands where such surface-disturbance and seasonal limitations are in place to protect known sensitive resources. The BLM made the determination that the most effective means of identifying lands that should be

excluded on this basis was to exclude those lands within each field office where stipulations for no surface disturbance, controlled surface use, or seasonal limitations are in place for oil and gas leasing. Under this alternative, the BLM would place a priority on protecting known sensitive resources within each field office by excluding certain lands from application for leasing. Figure 13 shows the lands that would be available for application for lease under Alternative C.

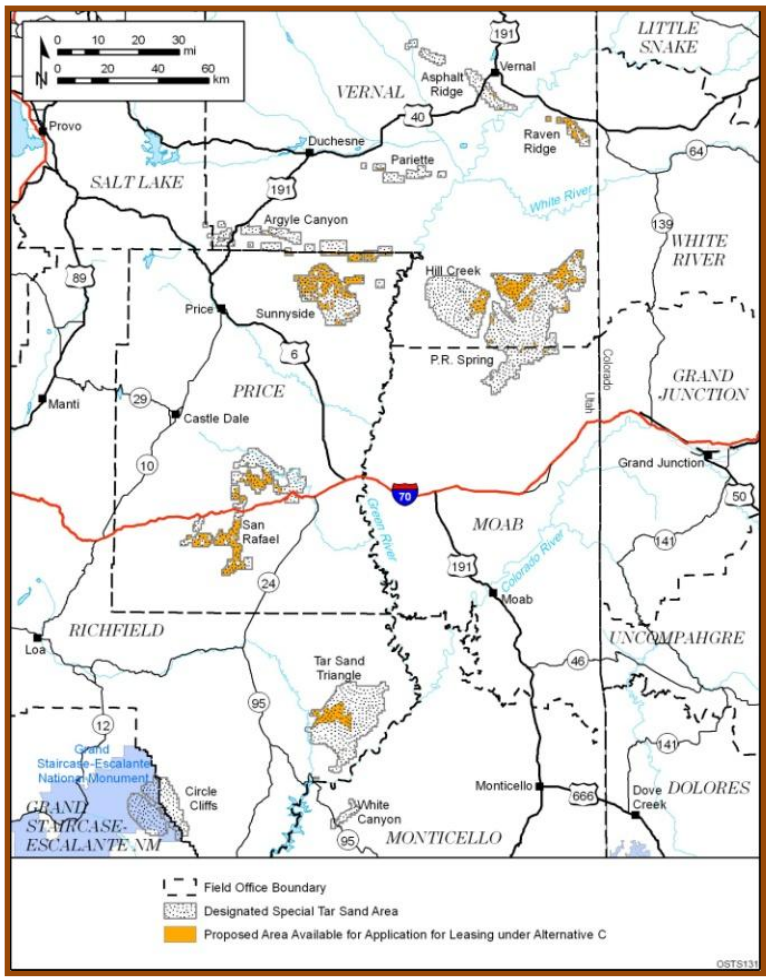

Figure 13: Lands Available for Application for Leasing under alternative C for Commercial Tar sands Development within the STSAs in Utah

Table 7 lists the approximate number of acres of BLM-administered lands, including areas where the Federal government owns only the mineral estate, available for application for commercial leasing under Alternative C by STSA.

Table 7: Estimated Acres Potentially Available under Alternative C for Application for Leasing in Each STSA for Commercial Tar Sands Development[a]

STSA	BLM-Administered Lands	Split Estate Lands (Federal minerals only)	Total Acres
Argyle Canyon	0	0	0
Asphalt Ridge	1,372	93	1,464
Circle Cliffs[b]	0	0	0
Hill Creek[c]	19,455	480	19,934
Pariette	830	0	830
P.R. Spring	50,727	6,001	56,728
Raven Ridge	9,935	16	9,950
San Rafael Swell	54,492	0	54,492
Sunnyside	48,731	14,010	62,741
Tar Sand Triangle	22,511	0	22,511
White Canyon	386	0	386
Total – Alternative C	208,438	20,600	229,038

[a] Totals may not be exact because of rounding. These estimates were derived from GIS data compiled for the FPEIS analyses. The GIS data may contain errors; therefore, these estimates should be considered to be only representative of the proposed leasing area.

[b] Leasing for commercial tar sands development in the Circle Cliffs STSA is excluded under all alternatives because it falls entirely within the GSENM and units managed by the NPS on which mineral leasing and development are prohibited.

[c] The split estate lands in the Hill Creek STSA include 35,472 acres of Federal mineral estate within the Hill Creek Extension of the Uintah and Ouray Reservation on which the surface is owned by the Ute Indian Tribe..

Table 8 identifies the types of stipulations and restrictions in place for oil and gas leasing in each state that are being used to identify those lands that would not be available for application to lease for commercial tar sands development under Alternative C.

Table 8: Resources Covered by Stipulations and Restrictions in Place for Oil and Gas Leasing in the STSAs That Are Being Used to Identify Lands That Would Not Be Available for Application for Commercial Tar Sands Development Leasing under Alternative C
Slopes and fragile/erosive soils
Riparian zones and wetlands
Sage grouse leks and nesting habitat
Raptor nests, and habitat
Wildlife habitat[a]
Listed, proposed, or candidate threatened or endangered and BLM-designated sensitive species
Sensitive plants and relict vegetation
VRM Class II areas and other high-quality visual resources
ACECs
Paleontological resources
Other[b]

[a] Wildlife habitat includes a combination of winter range, crucial winter range, summer range, and calving areas for antelope, bighorn sheep, deer, and elk, as well as seclusion areas for other wildlife.

[b] Other resources include Special Management Areas (SMAs,) recreation areas, and areas restricted from leasing for reasons not specified in the GIS data.

As shown in Figure 13 and reflected in Table 7, 202,186 acres available for application for leasing under Alternative B are excluded under Alternative C; several STSAs become entirely unavailable for application for lease. In addition, in some of the STSAs, a large portion of the lands proposed to be available for leasing is composed of relatively small, isolated tracts of land. These factors could result in limiting the potential amount of commercial tar sands development to a level below that which might be realized under Alternative B.

Rationale for Non-Selection: Alternative C was not selected as the Proposed Plan Amendment because the alternative would not make the "most geologically prospective lands in Utah available for application for leasing. Thus it is not fully consistent with the mandate of the Energy Policy Act of 2005. Much of the most geologically prospective acreage of the STSAs would be excluded under Alternative C. In addition, this unreasonably fragments the area that would be available for application, resulting in parcels that are unlikely to be explored, leased, or developed. This could be an impediment to sound and rational development of the resource and

can reduce the economic return to the public. If tar sands resources are by-passed because of the exclusions in Alternative C that could also limit the benefits to the nation from exploitation of a domestic unconventional energy source.

Selection of Alternative C precipitously limits or restricts the decisionmaker's discretion to balance tar sands use and the protection of resources or resource values, in accordance with FLPMA's principal of "multiple use." Although as presently being researched, tar sands extraction would have many impacts similar to those of oil and gas development, exclusion of areas based on existing management prescriptions (e.g., no surface disturbance or seasonal limitation that are in place for oil and gas leasing) unnecessarily speculates upon the nature and degree of impacts that would be caused by future tar sands development. It would be premature to eliminate areas prior to site-specific analysis based on factors that are not known now, but that would be known at the leasing or operation permitting stages, such as location, timing and type of tar sands technology, that may show that these resources could be adequately protected through mitigation. Unlike Alternative B, Alternative C does not give the decisionmaker the necessary discretion to optimize the recovery of energy resources, establish appropriate lease stipulations to mitigate anticipated impacts, or to fully protect a resource or resource value by choosing not to offer an area for lease.

COMMENTS ON THE PRMP AND FEIS

The BLM received a comment after the publication of the PRMP/FEIS questioning why the proposed plan amendments were not going to be subject to the protest process described in the BLM's planning regulations (43 CFR 610.2).

Because of the strategic importance and multiple state involvements in the process, the Assistant Secretary, Land and Minerals Management, in the Department of the Interior will approve the proposed plan amendments. As such, the proposed amendments could not be subject to any protest to the BLM Director, who is subordinate to the Assistant Secretary. Thus, the regulatory process was not applicable.

THE DECISION

Preparation of the Plan Amendments was done under the authority of the FLPMA of 1976 and in accordance with BLM planning regulations (43 CFR Part 1600). The Approved Plan Amendments are consistent with the requirements of the Energy Policy Act of 2005, provides a balanced use and protection of resources, and analyze potential environmental impacts. A PEIS was prepared to analyze and provide support for the approval of these Plan Amendments in compliance with the NEPA.

The Approved Plan Amendments are identical to the Proposed Plan Amendments presented in the PRMP/FEIS, although some clarifications were added, and a few corrections made. Management decisions and guidance for public lands under the jurisdiction of the Glenwood

Springs, Grand Junction, White River, Price, Vernal, Monticello, Richfield, Kemmerer, Rock Springs, and Rawlins Field Offices are presented in the Approved Plan Amendments.

The decision is to adopt Alternative B for both oil shale and tar sands and to approve the attached plan amendments as the Approved Plan Amendments for management of public lands that are administered by the BLM's Glenwood Springs, Grand Junction, White River, Price, Vernal, Monticello, Richfield, Kemmerer, Rock Springs, and Rawlins Field Offices (see Attachment — Appendix A). The Approved Plan Amendments replace public land decisions regarding oil shale and tar sands resources in the following plans:

Colorado:

- Glenwood Springs RMP (BLM 1988, as amended by the 2006 Roan Plateau Plan Amendment [BLM 2006b, 2007a, 2008])
- Grand Junction RMP (BLM 1987)
- White River RMP (BLM 1997b, as amended by the 2006 Roan Plateau Plan Amendment [BLM 2006b, 2007a])

Utah:

- Book Cliffs RMP (BLM 1985), as revised by the 2008 Vernal Field Office RMP/EIS (BLM 2008a)
- Diamond Mountain RMP (BLM 1994), as revised by the 2008 Vernal Field Office RMP/EIS (BLM 2008a)
- San Rafael Resource Area RMP (BLM 1991a, as revised by the 2008 Price Field Office RMP/EIS (BLM 2008b); and
- Price River Resource Area MFP, as amended (BLM 1989), as revised by the 2008 Price Field Office RMP/EIS (BLM 2008b)
- Henry Mountain MFP (BLM 1982, as revised by the 2008 Richfield Field Office RMP/EIS (BLM 2008c);
- San Juan Resource Area RMP (BLM 1991b, as revised by the 2008 Richfield and Monticello Field Office RMPs/EISs (BLM 2008c and 2008d).

Wyoming:

- Great Divide RMP (BLM 1990)
- Green River RMP (BLM 1997a, as amended by the Jack Morrow Hills Coordinated Activity Plan [BLM 2006a])
- Kemmerer RMP (BLM 1986).

What the Decision to Amend the RMPs Provides

The decision serves as the first step in the process to establish a commercial oil shale and tar sands program that meets the intent of Congress while taking advantage of information and practices to minimize future impacts and ensure that states, local communities, and the public have the opportunity to be involved at future NEPA steps in the oil shale and tar sands program.

The decision is an allocation decision, (i.e., making lands available or open for the potential leasing of oil shale and tar sands resources). The BLM anticipates that the eventual development of the oil shale and tar sands resources would proceed in a phased approach – proceeding from this allocation decision, to a leasing decision and then to an operational permit approval. The allocation decision essentially removes an administrative barrier present today that prevents the BLM from accepting and considering applications to lease oil shale or tar sands without first amending the respective land use plan. Prior to the leasing and development phases additional NEPA analysis will be required. This measured approach, where each step builds upon a prior step, ensures that state and local communities have the opportunity to be involved and are fully informed of the activities associated with the program. The allocation decisions open the areas to the availability for the application to lease as identified in Alternative B for Oil Shale and Tar Sands in the PRMP/FEIS.

Oil Shale Decisions

- Is subject to existing Federal, State and local laws and regulatory requirements, as well as established BLM policies.
- Identifies the most geologically prospective oil shale areas within the planning unit;
- Designates 1,991,222 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable Federal, state, and local regulations and BLM policies;
- Removes the administrative barrier to BLM considering any application to lease oil shale;
- Allows only the use of surface mining technologies in areas in Utah and Wyoming where the overburden is 0 to 500 ft thick;
- Modifies existing decisions related to oil shale leasing in the White River RMP;
- Requires additional NEPA analysis of the environmental, social, and economic effects of reasonably foreseeable development before the issuance of leases for commercial development;
- Requires additional NEPA analysis of the site-specific environmental, social, and economic effects of particular development proposals to consider site-specific and project-specific factors before the approval of project-specific development plans; and

- Requires the BLM to consider and give priority to the use of land exchanges, where appropriate and feasible, to consolidate land ownership and mineral interests within the oil shale basins.

Tar Sands Decision

- Is subject to existing Federal, State and local laws and regulatory requirements, as well as established BLM policies.
- Designates 431,224 acres of land within the STSAs as available for application for leasing for commercial tar sands development in accordance with applicable Federal, state, and local regulations and BLM policies;
- Requires additional NEPA analysis of the environmental, social, and economic effects of reasonably foreseeable development before the issuance of leases for commercial development;
- Requires additional NEPA analysis of the site-specific environmental, social, and economic effects of particular development proposals to consider site-specific and project-specific factors before the approval of project-specific development plans; and
- Requires the BLM to consider and give priority to the use of land exchanges where appropriate and feasible to consolidate land ownership and mineral interests within the STSAs.

What the Decision to Amend the RMPs Does Not Provide

The Approved Plan Amendments do not authorize the immediate leasing of oil shale or tar sands resources. The Amendments do nothing more than remove the administrative barrier present today that prevents the BLM from accepting and considering applications to lease oil shale and tar sands without first amending the respective land use plan. The amendment of the land use plans does not authorize any ground-disturbing activities and is not an irreversible or irretrievable commitment of resources under NEPA.

- The Approved Plan Amendments do not contain decisions for minerals other than oil shale and tar sands for land administered by the BLM's Glenwood Springs, Grand Junction, White River, Price, Vernal, Monticello, Richfield, Kemmerer, Rock Springs, and Rawlins Field Offices. The Approved Plan Amendments also do not contain decisions for mineral estates for Forest Service lands located in the planning area, for lands under the jurisdiction of other Federal agencies, or for private or State-owned lands and minerals.

- The Approved Plan Amendments do not contain decisions for allocating lands for leasing STSAs in NPS units. Leasing STSAs in NPS units is allowed only where mineral leasing is permitted by law and where the lands are open to mineral resource disposition in accordance with any applicable NPS Minerals Management Plan. The NPS Regional Director also must find that leasing within an NPS unit would not result in any significant adverse impacts on the NPS unit or any contiguous unit.
- The Approved Plan Amendments do not apply to private or state lands shown on maps included in the RMP.
- The Approved Plan Amendments do not affect valid existing rights.
- In addition, many decisions are not appropriate at this level of planning and are not included in the ROD. Examples of these types of decisions include:

  - *Statutory requirements.* The decision will not change the BLM's responsibility to comply with applicable laws, rules, and regulations.
  - *National Policy.* The decision will not change BLM's obligation to conform to current or future National policy, as established by BLM itself, the Department, the President or Congress.
  - *Funding levels and budget allocations.* These are determined annually at the National level and are beyond the control of the field office.

NOTICE OF MODIFICATIONS AND CLARIFICATIONS MADE TO THE APPROVED PLAN

Modifications

After careful review of the information provided by the Governors of Colorado, Utah and Wyoming during the Governor's consistency review and continued internal review, BLM determined that no modifications to the Proposed Plan were necessary.

Clarifications

The following clarifications and minor corrections made to the information included in the PRMP/FEIS are reflected in the attached Approved Plan:

- The ROD for the Price Field Office RMP/EIS, the Richfield Field Office RMP/EIS, and the Vernal Field Office RMP/EIS were signed in October 2008 and for the Monticello RMP/EIS, the ROD was signed in November 2008. These decision documents supersede the decision contained in the prior RMPs [Book Cliffs RMP (BLM 1985); Diamond

Mountain RMP (BLM 1994); Price River Resource Area MFP, as amended (BLM 1989); Henry Mountain MFP (BLM 1982); San Rafael Resource Area RMP (BLM 1991); and San Juan Resource Area RMP (BLM 1991)] for the planning areas with the exception of the decisions pertaining to oil shale and tar sands resources. Those decisions for oil shale and tar sands resources are contained in this ROD.

- The adoption of the RODs for the four Utah RMPs listed above changed the number of plans being amended from 12 to 10. The Approved Plan amends eight land use plans for to designate lands, as available for commercial oil shale leasing and amends four lands use plans to designate lands as available for tars sands leasing. Two of the plans that are being amended contain both oil shale and tar sands resources, so a total of ten plans are being amended.
- This ROD only amends the decisions for oil shale and tar sands resources in the 10 existing RMPs, and does not amend any of the decisions or protocols for the management of the other resource uses or values, such as air quality, wildlife, cultural resources, water quality, special resource values, etc.
- A number of land use plans are and were undergoing revision, as part of that process where WSR inventories were undertaken. Where a river or river segment was found to be "eligible" for inclusion in the WSR system as part of one of these inventories, the BLM Handbook directs the BLM to protect the lands along the eligible segment until a "suitability" determination is made as part of the land use planning process. If the river or river segment is found to be "non-suitable," the lands along the river then would be available for other uses. The 2008 ROD for the Vernal Field Office, determined that the river segments of Evacuation Creek were not eligible for inclusion. For commercial leasing to occur on the excluded segments within the OSEC's PRLA, if the lease is relinquished, or any of the excluded segments outside of the PRLA boundary, the Vernal Field Office RMP would need to be amended.
- A clarification was made that additional NEPA analysis of the environmental, social, and economic effects of development would be required before the issuance of leases for commercial development or approval of project-specific plans.
- On April 10, 2008, the Wyoming Environmental Quality Council designated the Abode Town as "Very Rare or Uncommon." This designation was finalized pursuant to Wyoming Statue §35-11-112(a)(v) and chapter 7 of the Environmental Quality Council Rules of Practice and Procedure. This area consists of the Adobe Town WSA (86,000 acres) and the Monument Valley Management Area (69,940 acres), both of which were excluded from both Alternative B and C in the PRMP/PEIS. The remaining fringe area was not excluded from Alternative B and C.
- The Rawlins Proposed Resource Management Plan and Final Environmental Impact Statement was recently published, and the Field Office is in the process of preparing the ROD. The surface geological, historical, archaeological, wildlife and scenic values of the fringe area would be managed according to the management prescriptions and protocols contained in the ROD for the Rawlins RMP/EIS. During the subsequent NEPA analysis, if an oil shale application is received for a parcel in the fringe area around the Abode Town WSA or the Monument Valley Management Area, when specific technical and environmental information is available for analysis at that time, any potential conflicts

with the Wyoming Environmental Quality Council's designation can be addressed. The appropriate BLM Field Office will consider all available information and a range of alternative actions to mitigate or eliminate impacts to resource values present. This is consistent with the intent of the "Very Rare or Uncommon" designation to provide a higher level of scrutiny when it comes to non-coal mine permits."

MANAGEMENT CONSIDERATIONS IN SELECTING THE APPROVED PLAN AMENDMENTS

The Approved Plan Amendments have been selected on the basis of the following factors, consistent with the requirements of the Energy Policy Act of 2005, a balanced use and protection of resources, the analysis of potential environmental impacts and consideration of formal comments and recommendations from cooperating agencies and the public.

Energy Policy Act of 2005

Consideration has been given to the requirements of the Energy Policy Act of 2005, Public Law (P.L.) 109-58, to establish a commercial leasing program for oil shale and tar sands resources. In particular, the requirement that a programmatic environmental impact statement be completed "for a commercial leasing program on public lands, with an emphasis on the most geologically prospective lands in Colorado, Utah, and Wyoming."

Consideration has also been given as to whether the Approved Plan Amendments conform with the intent of Congress in establishing a commercial oil shale and tar sands program, while taking advantage of the best available information and practices to minimize impacts and ensuring that states, local communities, and the public have the opportunity to be involved in development of the PEIS analysis.

Comments and Recommendations

Due to the diversity of community needs and stakeholders affected by management of BLM lands, there was both support and opposition to certain components of the Proposed Plan Amendments. The BLM considered the concerns expressed by the states, tribal and local governments, industry, special interest groups, and the public. Consideration was given whether the Approved Plan Amendments protected other resources found on the public lands and whether impacts on local communities were minimized.

A major consideration in formulating the Approved Plan Amendments were the environmental socioeconomic, resource and technology concerns, and alternatives raised as a result of the December 13, 2005 Notice of Intent (NOI) initiating the preparation of the PEIS. Consideration of these issues and concerns, in addition to those expressed by cooperating agencies with whom BLM worked collaboratively throughout the development of the PEIS, prompted the BLM to reconsider the scope of the analysis in the PEIS. The BLM determined that the analysis to support an immediate leasing decision would require making many speculative assumptions regarding potential, unproven technologies. Consequently, the BLM modified its recommendation to the official responsible for the scoping decision – the Assistant Secretary, Land and Minerals Management –from the purpose of offering specific parcels for lease, to a recommendation to allocate lands available for potential leasing.

In addition, all substantive comments received during the comment period on the Draft PEIS were reviewed and considered. Modifications to the Draft PEIS and alternatives were made, as appropriate to form the Approved Plan Amendments.

Balanced Use and Environmental Protection

The BLM considered whether the Approved Plan Amendment would improve and sustain properly functioning resource conditions, while considering the need and demand for existing or potential resource commodities and values. Consideration was given whether there was an appropriate balance of resource use to meet resource, social and economic concerns in the planning areas. The impact analysis in the PRMP/FEIS discloses, with the exception noted in the socioeconomic analysis concerning potential impacts to land values, that there are no impacts to the environment or socioeconomic setting of the study area. The amendment of the land use plans does not authorize any ground-disturbing activities and there are no irreversible or irretrievable commitments of resources.

The BLM also considered the wealth of information on the consequences of oil and gas and underground and surface mining activities. The BLM used comparable data, and the Bureau's professional experience with surface-disturbing activities associated with these types of mineral development, to determine that the Bureau had sufficient information on the nature of the effects for an allocation decision to be made. The analysis of potential impacts associated with oil shale and tar sands development as disclosed in Chapters 4, 5 and 6 of the PRMP/FEIS provided essential information necessary for formulating the Approved Plan Amendments.

Consideration was given to whether the Approved Plan Amendments provided the BLM with the discretion to establish appropriate lease stipulations to mitigate anticipated impacts or eliminate areas from consideration for leasing to protect resource values. The Approved Plan Amendments require site-specific NEPA analysis to be carried out prior to issuance of any oil shale or tar sands leases, and the environmental consequences to specific resource values and uses within the areas and any alternative actions be analyzed. If, pursuant to that NEPA and leasing process, the BLM determines that leasing and subsequent development of the oil shale or tar sands resources would cause significant impacts, the BLM can require the applicant to (1) mitigate the impact so that it is no longer significant, (2) move the proposed lease location, or, if neither of these

options resolves the anticipated conflicts, (3) the BLM can decide that the importance of development of the oil shale and tar sands resources outweighs protection of the competing resource value and approve the application, or 4) BLM can choose not to issue the particular lease. The requirement to perform future NEPA analyses and associated compliance activities, gives the BLM the discretion to establish appropriate lease stipulations to mitigate anticipated impacts or eliminate areas from consideration for leasing to protect resource values, if the mitigation could not be prescribed as conditions of BLM approval of plans for development.

CONSISTENCY AND CONSULTATION REVIEW

Governor's Consistency Review

43 U.S.C. §1712(c)(9) states that the Secretary of the Interior shall "coordinate the land-use inventory, planning , and management activities of or for such lands with the land-use planning and management programs of other Federal departments, and agencies and of the States and local governments within which the lands are located." It further states that "the Secretary shall assure that consideration is given to those State, local and tribal plans that are germane in the development of land-use plans for public lands [and] assist in resolving, to the extent practical, inconsistencies between Federal and non-federal government plans…." This does not require the BLM to adhere to or adopt the plans of other agencies or jurisdictional entities, but rather to give consideration to this plan and make an effort to resolve inconsistencies to the extent practical.

Congress also authorized the Secretary to lease federal oil shale and tar sands resources and has declared them to be "strategically important domestic resources that should be developed" … "to benefit the United States while taking into account affected States and communities. The BLM is aware that there are State planning decisions relevant to aspects of public land management that are discrete from, and independent of, Federal law. As the BLM is bound by this and other federal laws, however, it may be possible that oil shale or tar sands projects would occur that would not be completely consistent with all aspects of State and local plans, and inconsistencies between Federal and non-federal government plans could only be resolved to the extent practical (FLPMA, Title II Sec. 202 (c)(9)).

Where State plans conflict with Federal law, there will be an inconsistency that cannot be resolved or reconciled. Thus, while State and Federal planning processes, under FLPMA, are required to be as integrated and consistent as practical, the Federal agency planning process is not bound by or subject to State plans, planning processes, or planning stipulations.

Under the PRMP/FPEIS's allocation decisions, the BLM is only permitted to consider applications to lease. The allocation decision does not grant any property rights, nor does it authorize any ground-disturbing activities, and is not an irreversible or irretrievable commitment of resources under NEPA. Therefore, the allocation decision does not conflict with any state,

local, or Tribal plans. On September 5, 2008, the BLM initiated the 60-day Governor's Consistency Review of the PRMP/FPEIS.

By letters dated November 4, 2008, Governors Freudenthal, Huntsman, and Ritter provided comments concerning the Proposed Plan Amendments, for their respective States. The three Governors all submitted comments and recommendations concerning consistency with State plans, programs and policies. The BLM reviewed these letters and did not identify any inconsistencies concerning State or local plans, policies, and programs.

COOPERATING AGENCIES

The PRMP/FPEIS was prepared in cooperation with 14 Federal, states, and local governmental organizations and numerous opportunities for coordination were provided these entities. These included coordination during scoping period, providing briefings, formulation of the alternatives, and providing opportunities to review and comment on preliminary and internal drafts of the PEIS. The BLM held many informal meetings and discussions with the cooperating agencies. In addition, the BLM consulted with the U.S. Environmental Protection Agency (EPA) on the PRMP/FEIS.

The BLM worked collaboratively with its cooperating agencies throughout the process to create a balanced commercial leasing program, consistent with the intent of Congress. Management plans and programs established by these cooperating agencies were considered in the preparation the PRMP/FPEIS based on information provided by the agencies. In consultation with the cooperating agencies, the BLM modified the nature and scope of the original PEIS from a leasing decision to a land use planning allocation decision. The allocation decision, by opening lands to leasing, only permits the BLM to consider applications to lease. The allocation decision does not grant any property rights, nor does it authorize any ground-disturbing activities, and is not an irreversible or irretrievable commitment of resources under NEPA. Therefore, the allocation decision does not conflict with any state, local, or tribal plans.

The following agencies participated as cooperating agencies in the preparation of the PRMP/FEIS:

- National Park Service;
- Bureau of Reclamation;
- U.S. Forest Service;
- U.S. Fish and Wildlife Service;
- State of Colorado, Department of Natural Resources and Department of Public Health and the Environment;
- State of Utah;
- State of Wyoming;
- Garfield County, Colorado;
- Mesa County, Colorado;
- Rio Blanco County, Colorado;

- Duchesne County, Utah;
- Uintah County, Utah;
- City of Rifle, Colorado; and
- Town of Rangely, Colorado.

The BLM will continue to cooperate with state, local, and tribal governments to promote consistency with their land use plans. No lease sales will be held before additional consultation with states, tribes and local governments, as directed by Congress in Section 369(e).

Tribal Governments

The BLM works directly with tribal governments on a government-to-government basis. The Federal/tribal government-to-government relationship was reaffirmed by the Federal government on May 14, 1998, with E.O. 13084 and strengthened on November 6, 2000, with E.O. 13175 (U.S. President 1998, 2000).

The BLM coordinates and consults with tribal governments, Native communities, and individual members of tribes whose interests might be directly and substantially affected by activities on public lands. It strives to provide the tribal entities sufficient opportunities for productive participation in BLM planning and resource management decision making. In addition, Section 106 of the NHPA requires Federal agencies to consult with Indian tribes for undertakings on tribal lands and for historic properties of significance to the tribes that may be affected by an undertaking (36 CFR 800.2 (c)(2)). BLM Manual 8120 (BLM 2004a) and Handbook H-8120-1 (BLM 2004b) provide guidance for Native American consultations.

The BLM developed a process to offer specific consultation opportunities to "directly and substantially affected" tribal governments, as required under the provisions of E.O. 13175 and to Indian tribes as defined under 36 CFR 800.2(c)(2). Starting in February 2006, tribal governments located in or with interests in the three-state study area were contacted by mail by the BLM State Directors. Table 9 lists the Tribal governments that were contacted by each state and describes the status of the ongoing consultations with each tribe. At the time the FPEIS was completed, six tribes (San Juan Southern Paiute Tribe, Ute Indian Tribe, Ute Mountain Ute Tribe, White Mesa Band of Ute Mountain Ute Tribe, Pueblo of Santa Clara, and Pueblo of Zuni) and five Navajo Chapters (Aneth, Navajo Mountain, Oljato, Red Mesa, and Teecnospos) had yet to respond to the BLM's request for consultation. Four tribes (Pueblo of Laguna, Pueblo of Nambe, Pueblo of Zia, and Southern Ute Tribe) and two Navajo Chapters (Dennehotso and Mexican Water) have indicated that further consultation is not needed. Eight tribes have expressed an interest in consultation with the BLM for this project, as summarized in Table 9.

The BLM will continue to consult with interested tribes, as appropriate. In addition, the BLM will continue to implement government-to-government consultation on a case-by-case basis for site-specific oil shale and tar sands resource development projects.

Table 9: Government-to-Government Consultation Summary	
Tribes Contacted for Consultation on the PEIS	Status of Consultation Process
Colorado	
Southern Ute Indian Tribe, Ignacio, CO	The Tribe has indicated that further consultation is not needed.
Ute Mountain Ute Tribe, Towoac, CO	No response to initial consultation letter. Follow-up consultation will be conducted.
Utah	
Hopi Tribe, Kykotsmovi, AZ	The Tribe has indicated it would be interested in the portion of the study area located in eastern Utah as far north as Price; no additional specific information or concerns have been conveyed to the BLM, to date.
Kaibab Paiute Tribe, Fredonia, AZ	The Tribe has expressed interest in development associated with a specific STSA; the Tribe has not conveyed any specific information or concerns to the BLM, to date.
Navajo Nation, Window Rock, AZ	The BLM has provided additional information at the request of the Tribe; the Tribe has expressed concern with certain specific areas that are located in the vicinity of the PEIS study areas. Follow-up consultation will be conducted.
Navajo Nation, Aneth Chapter, Montezuma Creek, UT	No response to initial consultation letter. Follow-up consultation will be conducted.
Navajo Nation, Dennehotso Chapter, Dennehotso, AZ	The Tribe has indicated that further consultation is not needed.
Navajo Nation, Mexican Water Chapter, Teecnospos, AZ	The Tribe has indicated that further consultation is not needed.
Navajo Nation, Navajo Mountain Chapter, Tonalea, AZ	No response to initial consultation letter. Follow-up consultation will be conducted.
Navajo Nation, Oljato Chapter, Monument Valley, UT	No response to initial consultation letter. Follow-up consultation will be conducted.
Navajo Nation, Red Mesa Chapter, Montezuma Creek, UT	No response to initial consultation letter. Follow-up consultation will be conducted.
Navajo Nation, Teecnospos Chapter, Teecnospos, AZ	No response to initial consultation letter. Follow-up consultation will be conducted.

Table 9: Government-to-Government Consultation Summary

Tribes Contacted for Consultation on the PEIS	Status of Consultation Process
Northwestern Band of Shoshone Nation, Pocatello, ID	The Tribe has expressed concern with certain specific areas that fall within the PEIS study areas, but has not subsequently conveyed any specific information or concerns to the BLM.
Paiute Indian Tribe of Utah, Cedar City, UT	The Tribe has expressed an interest in consulting with the BLM and becoming involved in development of the PEIS; there was no response to follow-up contact, however, BLM will continue to consult with the Tribe.
Pueblo of Laguna, Laguna, NM	The Tribe has indicated that further consultation is not needed.
Pueblo of Nambe, Santa Fe, NM	The Tribe has indicated that further consultation is not needed.
Pueblo of Santa Clara, Espanola, NM	No response to initial consultation letter. Follow-up consultation will be conducted.
Pueblo of Zia, Zia Pueblo, NM	The Tribe has indicated that further consultation is not needed.
Pueblo of Zuni, Zuni, NM	No response to initial consultation letter. Follow-up consultation will be conducted.
San Juan Southern Paiute Tribe, Tuba City, AZ	No response to initial consultation letter. Follow-up consultation will be conducted.
Ute Indian Tribe, Fort Duchesne, UT	The Tribe has indicated to the BLM that it would like to be consulted regarding potential leasing for commercial oil shale and/or tar sands development on split estate lands located in the Hill Creek Extension of the Uinta and Ouray Reservation prior to any parcel being put up for leasing.
White Mesa Band of the Ute Mountain Ute Tribe, Blanding, UT	No response to initial consultation letter. Follow-up consultation will be conducted.
Wyoming	
Northern Arapaho Tribe, Fort Washakie, WY	The BLM met with the Tribe at a joint meeting with the Eastern Shoshone Tribe in Ethete, WY, on August 25, 2006; a second meeting was conducted with the Tribe, by phone, on October 5, 2006. Subsequently, the Tribe requested and received copies of ethnohistory and cultural resource

Table 9: Government-to-Government Consultation Summary	
Tribes Contacted for Consultation on the PEIS	Status of Consultation Process
	overview documents being prepared in conjunction with the PEIS,
Eastern Shoshone Tribe, Fort Washakie, WY	The BLM met with the Tribe at a joint meeting with the Northern Arapaho in Ethete, WY, on August 25, 2006.
Shoshone-Bannock Tribes, Fort Hall, ID	The BLM has provided additional information at the request of the Tribe and has contacted specific individuals at the request of the Tribe; the Tribe has not conveyed any specific information or concerns to the BLM, to date.

NHPA — Section 106 Consultation

The Bureau of Land Management (BLM), the Advisory Council on Historic Preservation (ACHP), and the State Historic Preservation Officers (SHPOs) in Colorado, Utah, and Wyoming are developing a Programmatic Agreement (PA) to govern implementation of the oil shale and tar sands program and to address future impacts from oil shale and tar sands development that may affect historic properties on public lands.

Under the PA, BLM will use a phased approach to meet the agency's obligations under Section 106 of the National Historic Preservation Act for future leasing and development. Each subsequent phase will require an appropriate level of Section 106 analysis. The commercial leasing program for oil shale and tar sands resources is a multi-year effort in which the PEIS is only the first phase. Under the PEIS, BLM is analyzing an allocation decision, the amendment of 10 existing land use plans to designate certain public lands as open for application for future oil shale and tar sands leasing.

ESA — Section 7 Compliance

Section 7 of the Endangered Species Act of 1973, as amended (ESA) directs each federal agency, in consultation with the United States Fish and Wildlife Service (U.S. FWS) or the National Marine Fisheries Service (NMFS), as appropriate, to ensure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any listed threatened or endangered species or result in the destruction or adverse modification of critical habitat. See ESA § 7 (16 USC 1536). Under Section 7 of the ESA, those agencies that authorize, fund, or carry out the federal action are commonly known as "action agencies." If an action agency determines that its federal action "may affect" listed species or critical habitat, it

must consult with the U.S. FWS of the DOI or NMFS of the Department of Commerce (DOC) (collectively known as the "Services"), or both, whichever has jurisdiction over the species or habitat that may be affected. See 50 CFR 402.02, 402.13-14. If an action agency determines that the federal action will have no effect on listed species or critical habitat, the action agency may make a "no effect" determination. In that case, the action agency does not initiate consultation with the Services and its obligations under Section 7 are complete.

In order to make this determination, an action agency must consider the effects of the action at issue. Regulations implementing NEPA and ESA each use the terms "direct effect," "indirect effect," and "cumulative effect," but the definitions of these terms are not identical under the statutes. Regulations at 40 CFR 1508.8 and 50 CFR 402.02 highlight these differences. Under NEPA, and as demonstrated in the PEIS prepared in support of the amendment of these land use plans, an agency will examine the direct, indirect, and cumulative impacts of a proposed action. Indirect effects are those caused by the action, later in time, and reasonably foreseeable. Under the ESA, however, the effects of an action are evaluated by a stricter standard. Regulations implementing the ESA define the term "effects of an action" at 50 CFR 402.02 to include direct and indirect effects (and the effects of interrelated or interdependent activities), but limit indirect effects to those that are caused by the action, later in time, and reasonably certain to occur. In addition, ESA regulations limit the term "cumulative effects" to those effects of future state or private activities; NEPA regulations are not so limited.

The "reasonably certain to occur" standard used in the ESA regulations is more demanding than the "reasonably foreseeable" standard used in the NEPA regulations (see 40 CFR 1508.8). Thus it is possible that a proposed action may have "no effect" under the rigorous ESA standard, but have multiple effects under NEPA. The ESA standard has been part of interagency regulations at 50 CFR Part 402 since 1986 and is the subject of proposed rules recently promulgated by the Services. Interagency Cooperation Under the Endangered Species Act, 73 Fed. Reg. 47868 (Aug. 15, 2008) (to be codified at 50 CFR pt. 402).

In complying with its duty under Section 7, the BLM, as the action agency, has examined the effects on listed species and designated critical habitat of amending land use plans to identify lands as available for application for commercial leases for oil shale or tar sands development. The BLM also examined the proposed action of amending land use plans in this manner in light of the direction and analysis recently provided by the U.S. FWS regarding compliance with Section 7, concerning emissions of greenhouse gases, and any effects they may cause to listed species and designated critical habitats, in particular the polar bear (Caswell 2008; Hall 2008). As a result of these examinations, the BLM has determined that its proposed action of amending land use plans would cause no effect on any listed species or designated critical habitat. This determination is based on the following.

1. The Proposed Action, amendment of land use plans to identify lands as available for application for commercial leasing for oil shale or tar sands development, is an administrative task that would not cause any impact to listed species or critical habitat. The amendments do not commit the BLM to a particular course of action or authorize any ground-disturbing activity; they merely allow the BLM to consider granting leases—in the future—for oil shale or tar sands development. Nor do land use plan amendments result in future implementation actions that may cause emission of greenhouse gases (Caswell 2008).

2. The amendment of land use plans for such purpose does not establish a precedent or create any legal right that would allow ground-disturbing activities without further agency decision making and compliance with applicable statutes, including the ESA, NEPA, and other applicable authorities.

3. Before the BLM issues a lease or approves any ground-disturbing activity, the BLM will analyze the effects of the proposed action and ensure compliance with the ESA.

It is important to note that the effects of any future activities that might occur as a result of the issuance of a lease or approval of any ground-disturbing activity or other authorization on a lease, following site-specific compliance with ESA and other applicable laws, would not be effects, direct or indirect, of the Proposed Action at issue here. Until BLM receives an application to lease oil shale or tar sands resources for development, issues such a lease, and considers approval of any ground-disturbing activities on the lease, it is impossible to determine what effects on listed species or critical habitat might be "reasonably certain to occur" (see discussion above).

For the above reasons, the action agencies have determined, in compliance with section 7(a)(2) of the ESA, that amending land use plans to identify lands as available for application for commercial leasing for oil shale or tar sands development would have no effect on listed threatened or endangered species or critical habitat.

The BLM has not reached its "no effect" determination because listed species and critical habitat are unlikely to be present in lands described in the land use plan amendments. To the contrary, Tables 4.8.1-6 and 5.8.1-6 in the PEIS identify the listed species that occur in the states of Colorado, Utah, and Wyoming where the land use plan amendments would allocate lands for either oil shale or tar sands leasing. Portions of the designated areas are occupied by listed species or contain designated critical habitat. The BLM considered preparing a biological assessment (BA) and initiating consultation with the U.S. FWS under section 7(a)(2) of the ESA. After discussing various approaches, and closely examining the regulations implementing the ESA, the BLM determined, however, that the administrative action of amending land use plans in the manner described would not affect listed species or designated critical habitat.

Preparing a BA before a lease or site-specific project had been proposed would be based largely on conjecture and speculation. There would be simply no way to know before such a proposal is made whether the impacts to be assessed would be those that would actually occur as a result of a proposal by a future proponent. Further, without knowing the specifics of when and where a project would occur, it would be impossible to know what species, if any, would be affected by the project. The BLM considered whether it made sense to make assumptions for the purposes of a BA, but was left with no credible basis on which to make such assumptions. The BLM determined such assumptions would be speculative and not linked to the federal action of amending land use plans. Any BA would be a speculative assessment of effects from future site-specific projects, not of the current Proposed Action.

This is not to say that there would be no Section 7 consultations (including preparation of BAs or biological opinions (BOs) where appropriate) on future actions that may affect listed species or critical habitat. As noted above, the BLM fully expects that if an application for a lease, permit, or other authorization is received by the BLM for oil shale or tar sands development within lands

identified as available for application, procedures to comply with Section 7 of the ESA would be initiated at that time. Such procedures may take the form of a "no effect" determination by the BLM; preparation of a BA by the BLM; a "may affect, not likely to adversely affect" determination with U.S. FWS concurrence; consultation with the U.S. FWS; or issuance of a BO by the U.S. FWS. At such time as any "no effect" determination, BA, concurrence, or BO is prepared, such determination would be made based on a full record describing the proposed lease, project, site, method of construction, and other relevant information, all features lacking at the present time.

In reaching the "no effect" determination, the BLM found no direct or indirect effect on listed species or critical habitat as a result of the mere allocation of areas as available for application for commercial leases for oil shale or tar sands development, through land use plan amendment. Any effects to a listed species or critical habitat that might occur in an area available for lease application or eventual development would occur in the future and are simply unknown at this time, and would be caused, if at all, by the site-specific development, following full policy and legal review, including any consultation under Section 7 of the ESA.

At the outset in the process of considering the proposed action and developing this PEIS, BLM and U.S. FWS developed a Consultation Agreement (Agreement) to assist in complying with Section 7 consultation for this project. Specifically, this Agreement established the process upon which Section 7 consultation would be conducted between the BLM and U.S. FWS on the proposed Oil Shale and Tar Sands Leasing Program. This Agreement addressed consultation and conferencing on all species determined to be listed as threatened or endangered, or proposed for listing, and designated or proposed critical habitat occurring on the Federal lands and split estate resources managed by the BLM that may be impacted by leasing and development of oil shale and tar sands resources. Part of the Agreement provided for the development of conservation measures to support the conservation of ESA-listed species. Since the development of the Agreement, the scope of the proposed action has changed, and no longer includes the actual leasing of the resources, and the conservation measures will not be imposed on the basis only of the analysis presented in the PEIS. Rather, it been determined that the Proposed Action (amending land use plans to identify lands available for future commercial leasing of oil shale and tar sands) has no effect on listed species or critical habitat, and therefore, no imposition of conservation measures is warranted at this stage. However, prior to the issuance of any leases, additional biological evaluation will be carried out, and conservation measures may be imposed by BLM upon potential lessees if this subsequent biological assessment reveals that such measures are warranted.

For purposes of the programmatic environmental impact statement (PEIS), and to provide the public and any potential lessees with some sense of what conservation measures might be imposed, if warranted, the conservation measures that have been developed pursuant to the Agreement are presented in Appendix B and are assumed to be generally consistent with existing conservation agreements, recovery plans, and completed consultations. It is the intent of the BLM and the U.S. FWS to ensure that the conservation measures presented here are consistent with those currently applied to other land management actions where associated impacts are similar. However, it is presumed that potential impacts from possible development alternatives described in the PEIS are likely to vary in scale and intensity when compared with land management actions previously considered (e.g., oil and gas exploration and production, surface

mining, and underground mining). Hence, final conservation measures will be developed commensurate with the anticipated level of impact that may result from site-specific projects developed under the selected alternative, as analyzed in those site-specific project level analyses, and will be consistent with agency policies. For instance, current BLM guidance on similar actions (e.g., projects involved in development of fluid mineral resources) requires that the least restrictive stipulation that effectively accomplishes the resource objectives or resource uses for a given alternative should be used in order that a project remain in compliance with the ESA.

MITIGATION MEASURES

The PRMP/FEIS presents a preliminary, qualitative, analysis of the impacts of leasing and development of these resources to assist in informing the land use planning decision. This analysis of potential direct, indirect, and cumulative impacts associated with oil shale and tar sands development is based on currently known technologies. However, the level and degree of the potential impacts could not be quantified because this would require making many speculative assumptions regarding potential, unproven technologies, project size, and production levels. This analysis, nevertheless, discloses potential effects associated with leasing and development to provide the decisionmaker available information to assist in informing the allocation decision.

Included in the PRMP/FEIS is a brief description of mitigation measures to avoid or minimize environmental harm that the BLM may consider for use, if warranted by the results of subsequent NEPA analysis undertaken prior to issuance of oil shale commercial leases and/or approval of detailed site-specific plans of development. Use of the mitigation measures will be evaluated at that time. The effectiveness of these potential mitigation measures and the extent to which they are applicable would vary from project-to-project and need to be examined in detail in future NEPA reviews of leasing and project plans of development. Additional measures to mitigate environmental impacts may also be developed during subsequent NEPA analysis at the leasing level planning and project development stages.

PUBLIC INVOLVEMENT

One of BLM's primary objectives during development of the PRMP/FPEIS was to understand the concerns and issues of various members of the public by providing opportunities for meaningful participation in the resource management planning process.

Scoping

To achieve this, BLM, published the NOI to prepare PEIS in the Federal Register (70 FR 73791–73792) on December 13, 2005. The NOI identified planning criteria, initiated the public scoping process, and invited interested members of the public to provide comments on the scope and objectives of the PEIS and to identify issues to be addressed in the planning process. The BLM conducted scoping from December 13, 2005, through January 31, 2006. During that period, the BLM invited the public and interested groups to provide information on resource use, land allocations, and development and protection opportunities for consideration in preparation of the PEIS.

Open public meetings, were held in Salt Lake City, Utah (January 10, 2006); Price, Utah (January 11, 2006); Vernal, Utah (January 12, 2006); Rock Springs, Wyoming (January 13, 2006); Rifle, Colorado (January 18, 2006); Denver, Colorado (January 19, 2006); and Cheyenne, Wyoming (January 20, 2006). It is estimated that as many as 5,000 people participated in the scoping process by attending public meetings, providing comments, requesting information, or visiting the Oil Shale and Tar Sands PEIS Web site (http://ostseis.anl.gov).

Approximately 4,735 individuals, organizations, and government agencies provided comments on the scope of the PEIS, including the verbal comments provided at the public meetings. During the scoping period, more than 7,000 visits were made to the Oil Shale and Tar Sands PEIS Web site (http://ostseis.anl.gov) by more than 3,600 different individuals. The BLM published a scoping report (BLM 2006) that summarizes and categorizes the major themes, issues, concerns, and comments expressed by private citizens, government agencies, private firms, and nongovernmental organizations. These comments were considered in developing the alternatives in this PEIS.

Public Comments on the Draft EIS

The EPA published the Notice of Availability (NOA) of the Draft PEIS in the Federal Register on December 21, 2007 (72 FR 72751–72753). Publication of the NOA began a 90-day public comment period on the Draft PEIS, which was subsequently extended 30 days, ending on April 21, 2008. The Draft PEIS was posted in its entirety on the Oil Shale and Tar Sands PEIS Web site. Printed copies of the document and CDs containing the electronic files for the document were mailed upon request. More than 102,000 people and organizations participated in the public comment process. Nearly 170 recognized organizations (public and private) provided comments on the Draft PEIS. The BLM reviewed and responded to all comments and made changes to the FPEIS, as appropriate.

RELEASE of the RMPA and FPEIS

The EPA published the NOA of the RMPA/FPEIS in the Federal Register on September 5, 2008 (73 FR 51838–51840). The BLM will continue to actively seek the views of the public, using outreach techniques such as news releases and website information to offer opportunities for public participation and inform the public of new and ongoing project proposals, site-specific planning, and opportunities and timeframes for comment. The BLM will also continue to coordinate, both formally and informally, with the numerous states, Federal, tribal and local agencies and officials interested and involved in the management of oil shale and tar sands resources on public lands in Colorado, Utah, and Wyoming within the planning area.

AVAILABILITY OF THE PLAN

Paper and electronic copies of the ROD and the Approved Plan Amendments are available by request from the following locations:

- Colorado State Office, 2850 Youngfield Street, Lakewood, CO 80215
- Utah State Office, 440 West 200 South, Suite 500, Salt Lake City, UT 84101
- Wyoming State Office, 5353 Yellowstone, Cheyenne, WY 82009
- Vernal Field Office, 170 South 500 East, Vernal, UT 84078
- Price Field Office, 125 South 600 West, Price, UT 84501
- Richfield Field Office, 150 East 900 North, Richfield, UT 84701
- Monticello Field Office, 435 North Main, P.O. Box 7, Monticello, UT 84535
- White River Field Office, 220 E. Market Street, Meeker, CO 81641
- Glenwood Springs Field Office, 2425 S. Grand Ave., Suite 101, Glenwood Springs, CO 81601
- Grand Junction Field Office, 2815 H Road, Grand Junction, CO 81506
- Kemmerer Field Office, 312 Highway 189 North, Kemmerer, WY 83101
- Rawlins Field Office, at 1300 North Third, PO Box 2407, Rawlins, WY 82301
- Rock Springs Field Office, 280 Highway 191 North, Rock Springs, WY 82901

Interested persons may also review the PRMP Amendments and FPEIS on the Internet at http://ostseis.anl.gov.

BLM DIRECTOR RECOMMENDATION

Having considered a full range of reasonable alternatives, associated effects, and public input, I recommend adoption and implementation of the attached Resource Management Plan Amendments.

James L. Caswell
Director
Bureau of Land Management

11/17/08
Date

ASSISTANT SECRETARY APPROVAL

In consideration of the foregoing, I approve the Oil Shale and Tar Sands Resources Resource Management Plan Amendments.

C. Stephen Allred
Assistant Secretary - Land and Minerals Management
Department of the Interior

Nov 17, 2008
Date

APPROVED RESOURCE MANAGEMENT PLAN AMENDMENTS

INTRODUCTION

These Approved Plan Amendments amend the following Resource Management Plans for oil shale and tar sands resources:

Colorado:

- Glenwood Springs RMP (BLM 1988, as amended by the 2006 Roan Plateau Plan Amendment [BLM 2006b, 2007a, 2008])
- Grand Junction RMP (BLM 1987)
- White River RMP (BLM 1997b, as amended by the 2006 Roan Plateau Plan Amendment [BLM 2006b, 2007a])

Utah:

- Book Cliffs RMP (BLM 1985), as revised by the 2008 Vernal Field Office RMP/EIS (BLM 2008a)
- Diamond Mountain RMP (BLM 1994), as revised by the 2008 Vernal Field Office RMP/EIS (BLM 2008a)
- San Rafael Resource Area RMP (BLM 1991a, as revised by the 2008 Price Field Office RMP/EIS (BLM 2008b); and
- Price River Resource Area MFP, as amended (BLM 1989), as revised by the 2008 Price Field Office RMP/EIS (BLM 2008b)
- Henry Mountain MFP (BLM 1982, as revised by the 2008 Richfield Field Office RMP/EIS (BLM 2008c);
- San Juan Resource Area RMP (BLM 1991b, as revised by the 2008 Richfield and Monticello Field Office RMPs/EISs (BLM 2008c and 2008d).

Wyoming:

- Great Divide RMP (BLM 1990)
- Green River RMP (BLM 1997a, as amended by the Jack Morrow Hills Coordinated Activity Plan [BLM 2006a])
- Kemmerer RMP (BLM 1986).

and are now the base land use allocation plans for oil shale and tar sands resources on public lands administered by the BLM's Glenwood Springs, Grand Junction, White River, Price, Vernal, Monticello, Richfield, Kemmerer, Rock Springs, and Rawlins Field Offices.

The Approved Plan Amendments adopt the management described in Proposed Plan and the Management Common to All Alternatives section presented PRMP/FPEIS, with adjustments as described in the Notice of Modification and Clarification sections of the ROD.

CONSIDERATION OF OTHER BLM PLANS AND POLICIES

The ROD for the Approved Plan Amendments amends the land use plans existing at the time the ROD is implemented, identifying those areas designated as open for application for future oil shale and tar sands leasing. The existing plans within the PRMP/FPEIS study area include the following:

Colorado:

- Glenwood Springs RMP (BLM 1988, as amended by the 2006 Roan Plateau Plan Amendment [BLM 2006b, 2007a, 2008])
- Grand Junction RMP (BLM 1987)
- White River RMP (BLM 1997b, as amended by the 2006 Roan Plateau Plan Amendment [BLM 2006b, 2007a])

Utah:

- Book Cliffs RMP (BLM 1985), as revised by the 2008 Vernal Field Office RMP/EIS (BLM 2008a)
- Diamond Mountain RMP (BLM 1994), as revised by the 2008 Vernal Field Office RMP/EIS (BLM 2008a)
- San Rafael Resource Area RMP (BLM 1991a, as revised by the 2008 Price Field Office RMP/EIS (BLM 2008b); and
- Price River Resource Area MFP, as amended (BLM 1989), as revised by the 2008 Price Field Office RMP/EIS (BLM 2008b)
- Henry Mountain MFP (BLM 1982, as revised by the 2008 Richfield Field Office RMP/EIS (BLM 2008c);
- San Juan Resource Area RMP (BLM 1991b, as revised by the 2008 Richfield and Monticello Field Office RMPs/EISs (BLM 2008c and 2008d).

Wyoming:

- Great Divide RMP (BLM 1990)
- Green River RMP (BLM 1997a, as amended by the Jack Morrow Hills Coordinated Activity Plan [BLM 2006a])
- Kemmerer RMP (BLM 1986).

With the exception of the RMP for the GSENM, these existing BLM land use plans will be amended by decisions contained in the ROD for the PRMP/FPEIS. The proposed land use plan amendments are attached (Attachment – Appendix A). These plans continue to outline the

decisions or protocols for the management of the other resource uses or values within the appropriate planning areas.

In the event there are inconsistencies or discrepancies between previously approved plans and these Approved Plan Amendments, the decisions contained in the Approved Plan Amendments for oil shale and tar sands resources will be followed. The Glenwood Springs, Grand Junction, White River, Price, Vernal, Monticello, Richfield, Kemmerer, Rock Springs, and Rawlins Field Offices will continue to tier to statewide, national, and programmatic EISs and other NEPA and planning documents, as well as consider and apply Best Management Practices or other management protocols contained in other planning documents after appropriate site-specific analysis.

All future resource authorizations and actions will conform to, or be consistent with the decisions contained in these Approved Plan Amendments. All existing operations and activities authorized under permits, contracts, cooperative agreements or other authorizations will be modified, as necessary, to conform to this plan within a reasonable timeframe. However, this plan does not repeal valid existing rights on public lands. A valid existing right is a claim or authorization that takes precedence over the decisions developed in this plan. If such authorizations come up for review and can be modified, they will also be brought into conformance with the plan.

While the PRMP/FPEIS constitutes compliance with NEPA for the broad-scale decisions made in these Approved Plan Amendments, BLM will continue to prepare Environmental Assessments (EAs) and Environmental Impacts Statements (EISs) where appropriate as part of leasing and development level planning and decision-making. The appropriate BLM Field Office during subsequent NEPA analysis will consider all available information and a range of alternative management prescriptions for how the local resource values and uses would be managed, in conjunction with the specific leasing proposal or development. The NEPA analysis will evaluate any potential environment impacts and evaluate specific measures developed to mitigate or eliminate those impacts.

PLAN IMPLEMENTATION

General Implementation Schedule

The decisions of the Approved Plan Amendments go into effect upon signature of the ROD.

Maintaining the Plan

Land use plan decisions and supporting information associated with the Glenwood Springs, Grand Junction, White River, Price, Vernal, Monticello, Richfield, Kemmerer, Rock Springs,

and Rawlins Field Offices can be maintained to reflect minor changes in data, but maintenance is limited to refining, documenting, and/or clarifying previously approved decisions.

In addition, the BLM expects that new information gathered from field inventories and assessments, research, other agency studies, and other sources will update baseline data and/or support new management techniques, best management practices, and scientific principles. Where monitoring shows land use plan actions or best management practices are not effective, modifications or adjustments may occur without amendment or revision of the plan as long as assumptions and impacts disclosed in the analysis remain valid and broad-scale goals and objectives are not changed.

Plan maintenance will be documented in supporting records. Plan maintenance does not require formal public involvement, interagency coordination, or the NEPA analysis required for making new land use plan decisions.

Changing the Plan

The BLM believes that the RD&D program will significantly enhance the collective knowledge regarding the viability of innovative technologies for oil shale development on a commercial scale and provide additional information on environmental consequences and potential mitigations.

The Approved Plan Amendments may be changed, should conditions warrant, through a plan amendment process. A plan amendment may become necessary if major changes are needed, additional information is available or to consider a proposal or action that is not in conformance with the plan. The results of monitoring, evaluation of new data, or policy changes and changing public needs might also provide the impetus for an amendment. Generally, an amendment is issue-specific. If the plan amendments become outdated or otherwise obsolete, a further plan amendment may become necessary. Plan amendments are accomplished with public input and the appropriate level of environmental analysis.

Data used in development of the Approved Plan Amendments are dynamic. The data and maps used throughout the Approved Plan Amendments are for land use planning purposes and will be refined as site-specific planning and on-the-ground implementation occurs. Updating data is considered plan maintenance which will occur over time as the RMP is implemented (see the section on Plan Implementation). Please note that all acreages presented in the Approved Plan Amendment are estimations, even when presented to the nearest acre.

LIST OF PREPARERS

Sherri Thompson	PEIS Project Manager	BLM
Debra Agnolet	Program Analyst	BLM

REFERENCES CITED

BLM, 1991b, *Resource Management Plan Record of Decision and Rangeland Program Summary for the San Juan Resource Area*, Moab District, Utah, March.

BLM, 1982, *Hanksville-Henry Mountains Management Framework Plan*, Richfield District, Utah.

BLM, 1985 Record of Decision and Rangeland Program Summary for the Book Cliffs Resource Management Plan, Vernal District Office, Utah, May

BLM, 1986, *Record of Decision for the Kemmerer Resource Management Plan Record of Decision*, Grand Junction District, Colo., Jan.

BLM, 1987, Grand Junction Resource Area Resource Management Plan and Record of Decision, Grand Junction District, Colo., Jan.

BLM, 1988, *Record of Decision and Resource Management Plan*, Glenwood Springs Resource Area, Grand Junction District, Colo., June

BLM, 1989, *Decision Record and Finding of No Significant Impact for Amendment to the Management Framework Plan for the Price River Resource Area*, Moab District, Price River Resource Area, Utah, June.

BLM, 1990, *Great Divide Resource Area Record of Decision and Approved Resource Management Plan*, Rawlins District Office, Great Divide Resource Area, Wyo., Nov.

BLM, 1991a, *San Rafael Final Resource Management Plan*, Moab District, San Rafael Area, Utah, May

BLM, 1994, *Diamond Mountain Resource Area Resource Management Plan and Record of Decision*, Vernal District Office, Utah.

BLM, 1997a, *Record of Decision and Green River Resource Management Plan*, Green River Resource Area, Rock Springs District Office, Wyo., Oct.

BLM, 1997b, *White River Record of Decision and Approved Resource Management Plan*, White River Resource Area, Colo., Craig District, Meeker, Colo., July

BLM, 2004a, *Manual 8120 —Tribal Consultation under Cultural Resources*, Release 8-74, U.S. Department of the Interior

BLM, 2004b, *Handbook H-81-20-1—General Procedural Guidance for Native American Consultation*, Release -75, U.S. Department of the Interior.

BLM, 2006, *Summary of Public Scoping Comments for the Oil Shale and Tar Sands Resources Leasing Programmatic Environmental Impact Statement, prepared by Argonne National Laboratory, Argonne, Ill., for Bureau of Land Management, Solid Minerals Group, Washington D.C., Jan.*

BLM, 2006a *Record of Decision and Jack Morrow Hills Coordinated Activity Plan/Proposed Green River Resource Management Plan Amendment*, Rock Springs Field Office, Wyo., July.

BLM, 2006b, Record of Decision and Jack Morrow Hills Coordinated Activity Plan/Proposed Green River Resource Management Plan Amendment, Rock Springs Field Office, Wyo., July.

BLM, 2007a, *Record of Decision for the Approval of Portions of the Roan Plateau Management Plan Amendment and Environmental Impact Statement*, Glenwood Springs Field Office, Colo., June.

BLM, 2008, *Record of Decision for the Resource Management Plan Amendment for Portions of the Roan Plateau Planning Area Designated as Areas of Critical Environmental Concern Public Lands in Garfield County*, CO, March.

BLM, 2008a, Vernal Field Office Record of Decision and Approved Resource Management Plan, Vernal Field Office, Utah, October.

BLM, 2008b, Price Field Office Record of Decision and Approved Resource Management Plan, Price Field Office, Utah, October.

BLM, 2008c, Richfield Field Office Record of Decision and Approved Resource Management Plan, Richfield Field Office, Utah, October.

BLM, 2008d, Monticello Field Office Record of Decision and Approved Resource Management Plan, Monticello Field Office, Utah, October.

Donnell, 1987, "Storehouse of Energy Minerals in the Piceance Basin," in *Oil Shale, Water Resources, and Valuable Minerals of the Piceance Basin, Colorado: The Challenge and Choices of Development*, O.J. Taylor (editor), U.S. Geological Surrey Professional Paper 1310.

Tabet, D., 2007, personal communication from Tabet (Utah Geological Survey, Salt Lake City, Utah) to S. J. Thompson (Bureau of Land Management Washington, D.C. Office), Dec. 14.

U.S. President, 1998, "Consultation and Coordination with Indian Tribal Governments," Executive Order No. 13084, *Federal Register* 63:27655, May 19.

U.S. President, 2000, "Consultation and Coordination with Indian Tribal Governments, Executive Order No. 13175, *Federal Register* 65:67429, Nov. 9.

Wiig , S., 2006a, personal communication from Wiig (BLM Rock Springs Field Office, Wyo.) to P. Perlewitz (BLM Wyoming State Office, Cheyenne, Wyo.), June 13.

Wiig, S., 2006b, personal communication from Wiig (BLM Rock Springs Field Office, Wyo.) to K.P. Smith (Argonne National Laboratory, Lakewood, Colo.), June 27.

LIST OF ACRONYMS

ACEC	Areas of Critical Environmental Concern
BLM	Bureau of Land Management
CHLs	Combined Hydrocarbon Leases
DOC	Department of Commerce
E.O.	Executive Order
EGL	E. G. L. Resources
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act
FPEIS	Geographic Information System
GSENM	Grand Staircase Escalante National Monument
KSLA	Known Sodium Leasing Areas
MFP	Management Framework Plan
MMTA	Mechanically Mineable Trona Area
NCA	National Conservation Area
NEPA	National Historic Preservation Act
NLCS	National Landscape Conservation System
NMFS	National Marine Fisheries Service
NOA	Notice of Availability
NOI	Notice of Intent
NPS	National Park Service
NRA	National Recreation Area
NSO	Oil Shale Exploration Company
P.L.	Public Law
PEIS	Programmatic Environmental Impact Statement
PRLA	Preference Right Lease Acreage
PRMP	Propose Resource Management Plan
RD&D	Research, Development and Demonstration
RMP	Resource Management Plan
RMPA	Resource Management Plan Amendments
ROI	Region of Influence
ROD	Record of Decision
SHPO	State Historic Preservation Officer
SMA	Special Management Areas
STSA	Special Tar Sands Area

USDI	United States Department of the Interior
U.S. FWS	US Fish and Wildlife Service
WSA	Wilderness Study Area
WSR	Wild and Science Rivers

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APPENDIX A:

APPROVED LAND USE PLAN AMENDMENTS
FOR
OIL SHALE AND TAR SANDS

APPENDIX A:
APPROVED LAND USE PLAN AMENDMENTS
FOR
OIL SHALE AND TAR SANDS

The U.S. Department of the Interior, Bureau of Land Management (BLM), develops land use plans to guide activities, establish management goals and approaches, and establish land use allocations within a planning area. Current land use plans are called resource management plans (RMPs); in the past, such plans were called management framework plans (MFPs), and some MFPs are still in use. Analyses conducted in this programmatic environmental impact statement (PEIS) support the amendment of specific land use plans in those field offices where oil shale and tar sands resources are located, as discussed in Chapters 2 and 6 of the PEIS. For oil shale, eight land use plans would be amended:

- Colorado
  - Glenwood Springs RMP (BLM 1988, as amended by the 2006 Roan Plateau Plan Amendment [BLM 2006a, 2007, 2008])
  - Grand Junction RMP (BLM 1987)
  - White River RMP (BLM 1997a, as amended by the 2006 Roan Plateau Plan Amendment [BLM 2006a, 2007, 2008])
- Utah
  - Book Cliffs RMP (BLM 1985, as revised by the 2008 Vernal Field Office RMP/EIS)[BLM2008a]
  - Diamond Mountain RMP (BLM 1994), as revised by the 2008 Vernal Field Office RMP/EIS (BLM2008a)
  - Price River Resource Area MFP, as amended (BLM 1989), as revised by the 2008 Price Field Office RMP/EIS (BLM 2008b)
- Wyoming
  - Great Divide RMP (BLM 1990)
  - Green River RMP (BLM 1997b, as amended by the Jack Morrow Hills Coordinated Activity Plan [BLM 2006b])
  - Kemmerer RMP (BLM 1986).

For tar sands, four land use plans would be amended:

- Utah
  - Book Cliffs RMP (BLM 1985), as revised by the 2008 Vernal Field Office RMP/EIS (BLM 2008a)

- Diamond Mountain RMP (BLM 1994, as revised by the 2008 Vernal Field Office RMP/EIS (BLM 2008a);
- Henry Mountain MFP (BLM 1982, as revised by the 2008 Richfield Field Office RMP/EIS (BLM 2008c);
- Price River Resource Area MFP, as amended (BLM 1989, as revised by the 2008 Price Field Office RMP/EIS (BLM 2008b);
- San Rafael Resource Area RMP (BLM 1991a, as revised by the 2008 Price Field Office RMP/EIS (BLM 2008b); and
- San Juan Resource Area RMP (BLM 1991b, as revised by the 2008 Richfield and Monticello Field Office RMPs/EISs (BLM 2008c and 2008d).

Table A-1 presents specific information regarding the approved land use plan amendments for each land use plan that is associated with Alternative B for oil shale, and Table A-2 presents the same information for amendments associated with Alternatives B for tar sands. These tables describe the individual amendments for each plan, along with the rationale for the amendment. Some of the proposed amendments are common to all land use plans; these amendments are presented first in each table. Amendments specific to individual plans are presented in the latter section of each table.

TABLE A-1 Approved Changes and Rationales for Land Use Plan Amendments Associated with Alternative B for Oil Shale[a,b]
Amendments Common to All Land Use Plans
Identify the most geologically prospective oil shale areas within the planning unit. *Rationale:* In accordance with the requirements of Section 369(d)(1) of the Energy Policy Act of 2005, the BLM has identified the most geologically prospective oil shale resources in Colorado and Utah as those deposits on public lands (including federal split estate) that yield 25 gal of shale oil per ton of rock (gal/ton) or more and are 25 ft thick or greater. The most geologically prospective oil shale resources in Wyoming are defined as those deposits that yield 15 gal/ton of shale oil or more and are 15 ft thick or greater.[c]
Specify that while the PEIS refers to "application for leasing for commercial oil shale development," the BLM could publish in the *Federal Register* one or more additional requests for expressions of interest in RD&D leasing within one or more of the states of Colorado, Utah, and Wyoming. Any new RD&D lease would have to be consistent with the applicable BLM land use plans. *Rationale:* In Section 369(c) of the Energy Policy Act of 2005, Congress expressly authorized the Secretary to make land available for leasing to conduct R&D activities with respect to technologies for the recovery of liquid fuels from oil shale. The impacts of new RD&D leasing are anticipated to be qualitatively similar to those of commercial oil shale leasing as analyzed in this PEIS. The RD&D impacts, however, are anticipated to be smaller in scale than those of commercial projects, at least until any RD&D lease might be converted to a commercial oil shale lease and expanded to include preference right acreage. Therefore, the analysis in the PEIS for commercial oil shale projects also provides sufficient analysis of RD&D projects for purposes of amending land use plans. New RD&D leases would be issued, if at all, only after site-specific analysis under NEPA. Conversion to commercial leases would also require an individualized NEPA document.
Specify that commercial leasing will occur utilizing a lease by application process described in Section 2.3.3. The process will require that additional NEPA analysis be conducted prior to lease issuance. Information collected as part of the lease application process will be incorporated into the NEPA analysis. *Rationale:* The BLM has concluded that, at this time, it does not have adequate information on the (1) potential magnitude and pace of commercial development, (2) potential locations for commercial leases, (3) technologies that will be employed, (4) size or production level of individual commercial projects, and (5) development time lines for individual projects to support decisions about lease issuance. As a result, the BLM is deferring decisions regarding lease issuance into the future and specifying that prior to processing applications for commercial leases for oil shale development, applicants will be required to identify key information regarding aspects of the proposed development needed to support a complete NEPA review (e.g., technologies to be employed, level of planned development, anticipated off-site impacts, strategies to comply with regulatory requirements, and so forth). During this NEPA review, the BLM will identify and establish appropriate lease stipulations to mitigate anticipated impacts.

TABLE A-1 Approved Changes and Rationales for Land Use Plan Amendments Associated with Alternative B for Oil Shale[a,b]
Specify that approval of the project-specific plan of operation will require NEPA review to consider site-specific and project-specific factors. The NEPA review for the plan of operations may be incorporated into NEPA for the lease application if adequate operational data are provided by the applicant(s). *Rationale:* Conducting additional NEPA review prior to approval of project-specific plans of operation will allow the BLM to identify and require appropriate mitigation measures as needed to control impacts beyond those established in the lease stipulations..
Specify that the BLM will consider and give priority to the use of land exchanges, where appropriate and feasible, to consolidate land ownership and mineral interests within the oil shale basins. *Rationale:* Section 369(n) of the Energy Policy Act of 2005 requires the Secretary of the Interior (the "Secretary") to consider and give priority to the use of land exchanges to facilitate the recovery of unconventional fuels. The Act states "…to facilitate the recovery of oil shale and tar sands, especially in areas where Federal, State, and private lands are intermingled, the Secretary shall consider the use of land exchanges where appropriate and feasible to consolidate land ownership and mineral interests into manageable areas." The Act also dictates that any land exchange undertaken shall be implemented in accordance with Section 206 of FLPMA.
Colorado
Glenwood Springs RMP, Glenwood Springs Field Office
Designate 12,424 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies. *Rationale:* As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.
Specify that applications for commercial leases using surface mining technologies will not be accepted in the planning area. *Rationale:* As described in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically, using today's technologies. Within the most geologically prospective oil shale area defined in the Piceance Basin in Colorado, the areas where the overburden is 0 to 500 ft thick are very limited, and it would be difficult to assemble a logical mining unit (see Figure 2.3-1).[d]

TABLE A-1 Approved Changes and Rationales for Land Use Plan Amendments Associated with Alternative B for Oil Shale[a,b]
Grand Junction RMP, Grand Junction Field Office
Designate 4,024 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies. *Rationale:* As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.
Specify that applications for commercial leases using surface mining technologies will not be accepted in the planning area. *Rationale:* As discussed in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick, because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically, using today's technologies. Within the most geologically prospective oil shale area defined in the Piceance Basin in Colorado, the areas where the overburden is 0 to 500 ft thick are very limited, and it would be difficult to assemble a logical mining unit (see Figure 2.3-1).[c]
White River RMP, White River Field Office
Designate 343,358 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies. In addition, the existing decision in the White River RMP regarding the prohibition of oil shale leasing within the Piceance Creek Dome area would be eliminated. Rationale: As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing (i.e., commercial and/or RD&D). The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B..
Specify that applications for commercial leases using surface mining technologies will not be accepted in the planning area. *Rationale:* As described in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick, because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically using today's technologies. Within the most geologically prospective oil shale area defined in the Piceance Basin in Colorado, the areas where the overburden is 0 to 500 ft thick are very limited, and it would be difficult to assemble a logical mining unit (see Figure 2.3-1).[d]

TABLE A-1 Approved Changes and Rationales for Land Use Plan Amendments Associated with Alternative B for Oil Shale[a,b]
Specify that certain decisions regarding oil shale leasing and development contained in the current RMP will be removed from the RMP. Specifically, the decisions that will be removed include those designating (1) that 294,680 acres of land are available for oil shale leases, of which 39,140 acres are available for surface mining, and (2) that lands within the "Piceance dome area" are currently closed to leasing for oil shale development. The RMP amendments will retain the existing decision regarding the 70,820-acre (which is included in total acres available for oil shale lease) Multimineral Zone (see Figure 3.1.1-3) that requires that the commercial development of oil shale, nahcolite, and dawsonite will only be allowed in this area if recovery technologies are implemented to ensure that each of these minerals can be recovered without preventing recovery of the others. *Rationale:* The BLM has determined that it will make all lands within the most geologically prospective oil shale area available for application for leasing, except that surface mining lease applications will not be accepted (see above). The BLM also has determined that it will not preclude commercial oil shale leasing in areas, such as the Piceance dome area, where extensive oil and gas leases exist. Decisions about commercial mineral development will be driven primarily by lease holders. The decision to maintain the restrictions associated with the Multimineral Zone will continue protection of the potential commercial value of all mineral resources within this area
Utah
Book Cliffs RMP, as revised by the 2008 Vernal Field Office RMP, Vernal Field Office
Designate 531,593 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies. *Rationale:* As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.
Specify that applications for commercial leases using surface mining technologies will only be accepted within an area of 85,640 acres within the most geologically prospective oil shale area where the overburden is 0 to 500 ft thick (see Figure 2.3-1). Applications for commercial leasing using surface mining technologies will not be accepted in any other areas. *Rationale:* As described in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick, because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically using today's technologies.
Specify that the Ute Indian Tribe will be consulted regarding potential leasing for commercial oil shale development on 57,657 acres of split estate lands located in the Hill Creek Extension of the Uintah and Ouray Reservation prior to considering any parcel for leasing;

TABLE A-1 Approved Changes and Rationales for Land Use Plan Amendments Associated with Alternative B for Oil Shale[a,b]
Rationale: During the tribal consultation process conducted in conjunction with this PEIS, the Ute Indian Tribe requested that such consultation be conducted.
Specify that certain decisions designating five areas totaling 48,000 acres as priority management areas for oil shale leasing will be removed from the RMP. Specifically, the decisions to be removed include those designating (1) three areas totaling 42,000 acres as available for underground mining, and (2) two areas totaling 6,000 acres as available for in-situ development. *Rationale:* The BLM has determined that it will make all lands within the most geologically prospective oil shale area available for application for leasing..
Diamond Mountain RMP, as revised by the 2008 Vernal Field Office RMP, Vernal Field Office
Designate 100,556 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies. *Rationale:* As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.
Specify that applications for commercial leases using surface mining technologies will not be accepted in the planning area. *Rationale:* As described in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick, because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically using today's technologies. Within the Diamond Mountain RMP planning area, there are no areas where the overburden is 0 to 500 ft thick (see Figure 2.3-1).[d]
Price River Resource Area MFP, as revised by the 2008 Price Field Office RMP, Price Field Office
Designate 107 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies. *Rationale:* As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.
Specify that applications for commercial leases using surface mining technologies will not be accepted in the planning area.

TABLE A-1 Approved Changes and Rationales for Land Use Plan Amendments Associated with Alternative B for Oil Shale[a,b]
Rationale: As described in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick, because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically using today's technologies. Within the Price River Resource Area MFP planning area, there are no areas where the overburden is 0 to 500 ft thick (see Figure 2.3-1).[d]
Wyoming
Great Divide RMP, Rawlins Field Office
Designate 68,405 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.
Rationale: As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.
Specify that applications for commercial leases using surface mining technologies will not be accepted in the planning area.
Rationale: As described in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick, because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically using today's technologies. Within the Great Divide RMP planning area, there are no areas where the overburden is 0 to 500 ft thick (see Figure 2.3-1).[d]
Green River RMP, Rock Springs Field Office
Designate 788,230 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.
Rationale: As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.
Specify that applications for commercial leases using surface mining technologies will only be accepted within an area of 248,000 acres within the most geologically prospective oil shale area where the overburden is 0 to 500 ft thick (see Figure 2.3-1). Applications for commercial leasing using surface mining technologies will not be accepted in any other areas.

TABLE A-1 Approved Changes and Rationales for Land Use Plan Amendments Associated with Alternative B for Oil Shale[a,b]

Rationale: As described in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick, because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically using today's technologies.

Kemmerer RMP, Kemmerer Field Office

Designate 143,987 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with applicable federal and state regulations and BLM policies.

Rationale: As described in Section 2.3.3, all lands within the most geologically prospective oil shale area that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.

Specify that applications for commercial leases using surface mining technologies will not be accepted in the planning area.

Rationale: As described in Section 2.3.1, surface mining will only be allowed in areas where the overburden is 0 to 500 ft thick, because 500 ft is assumed to be the maximum amount of overburden where surface mining can occur economically using today's technologies. Within the Kemmerer RMP planning area, there are no areas where the overburden is 0 to 500 ft thick (see Figure 2.3-1).[d]

[a] Abbreviations: BLM = Bureau of Land Management; FLPMA = Federal Land Policy and Management Act; MFP = management framework plan; NEPA = National Environmental Policy Act; PEIS = programmatic environmental impact statement; RD&D = research, development, and demonstration; RMP = resource management plan.

[b] Commercial leasing as used herein includes both commercial and RD&D leasing.

[c] The most geologically prospective oil shale resources in Colorado were defined on the basis of digital data provided by the U.S. Geological Survey taken from Pitman and Johnson (1978), Pitman (1979), and Pitman et al. (1989). In Utah, the most geologically prospective oil shale resources were defined by digital data provided by the BLM Utah State Office. In Wyoming, the most geologically prospective oil shale resources were defined on the basis of detailed analyses of available oil shale assay data (Wiig 2006a,b). As discussed in Section 1.2, the oil shale resource is not of as high a quality in Wyoming as it is in Colorado and Utah; therefore, the most geologically prospective oil shale resources were defined on the basis of a lower yield and thickness.

[d] The areas within the most geologically prospective oil shale areas where the overburden is 0 to 500 ft thick were mapped on the basis of a variety of sources of information. In Colorado, the area was defined on the basis of data published in Donnell (1987). In Utah, the area was mapped on the basis of data provided by the Utah Geological Survey (Tabet 2007). In Wyoming, the area was mapped on the basis of data provided by Wiig (2006a,b).

TABLE A-2 Approved Changes and Rationales for Land Use Plan Amendments Associated with Alternatives B for Tar Sands[a,b]
Amendments Common to All Land Use Plans
Identify the most geologically prospective tar sand areas within the planning unit. *Rationale:* In accordance with the requirements of Section 369(d)(1) of the Energy Policy Act of 2005, the BLM has identified the most geologically prospective tar sand resources in Utah as those deposits on public lands (including federal split estate) within the boundaries of the Special Tar Sand Areas.[c]
Specify that while the PEIS refers to "application for leasing for commercial oil shale and tars sands development," the BLM could publish in *the Federal Register* one or more additional requests for expressions of interest in RD&D leasing within the state of Utah. Any new RD&D lease would have to be consistent with the applicable BLM land use plans. *Rationale:* In Section 369(c) of the Energy Policy Act of 2005, Congress expressly authorized the Secretary to make land available for leasing to conduct R&D activities with respect to technologies for the recovery of liquid fuels from oil shale and tar sands. The impacts of new RD&D leasing are anticipated to be qualitatively similar to those of commercial tar sands leasing as analyzed in this PEIS. The RD&D impacts, however, are anticipated to be smaller in scale than those of commercial projects, at least until any RD&D lease might be converted to a commercial tar sands lease and expanded to include preference right acreage. Therefore, the analysis in the PEIS for commercial tar sands projects also provides sufficient analysis of RD&D projects for purposes of amending land use plans. New RD&D leases would be issued, if at all, only after site-specific analysis under NEPA. Conversion to commercial leases would also require an individualized NEPA document.
Specify that commercial leasing will require that additional NEPA analysis be conducted prior to lease issuance. Information collected as part of the lease application process will be incorporated into the NEPA analysis Specify that approval of the project-specific plans of operation will require NEPA review to consider site-specific and project-specific factors. The NEPA review for the plan of operations may be incorporated into NEPA for the lease application if adequate operational data are provided by the applicant(s). *Rationale:* Conducting additional NEPA review prior to approval of project- specific plans of operation will allow the BLM to identify and require appropriate mitigation measures as needed to control impacts beyond those established in the lease stipulations
Specify that the BLM will consider and give priority to the use of land exchanges, where appropriate and feasible, to consolidate land ownership and mineral interests within the STSAs. *Rationale:* Section 369(n) of the Energy Policy Act of 2005 requires the Secretary of the Interior (the "Secretary") to consider and give priority to the use of land exchanges to facilitate the recovery of unconventional fuels. The Act states "…to facilitate the recovery of oil shale and tar sands, especially in areas where Federal, State, and private lands are intermingled, the Secretary shall consider the use of land exchanges where appropriate and feasible to consolidate

TABLE A-2 Approved Changes and Rationales for Land Use Plan Amendments Associated with Alternatives B for Tar Sands[a,b]
land ownership and mineral interests into manageable areas." The Act also dictates that any land exchange undertaken shall be implemented in accordance with Section 206 of FLPMA..
Book Cliffs RMP, as amended by the 2008 Vernal Field Office RMP, Vernal Field Office
Designate the following amounts of land within the specific STSAs as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies: Hill Creek STSA: 56,506 acres P.R. Spring STSA: 153,003 acres[d] Raven Ridge STSA: 14,364 acres *Rationale:* As described in Section 2.4.3, all lands within the designated STSAs that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimates presented here represent those lands not excluded from commercial leasing under Alternative B.
Specify that the Ute Indian Tribe will be consulted regarding potential leasing for commercial tar sands development on split estate lands located in the Hill Creek Extension of the Uintah and Ouray Reservation prior to considering any parcel for leasing. These lands fall entirely within the Hill Creek STSA. *Rationale:* During the tribal consultation process conducted in conjunction with this PEIS, the Ute Indian Tribe requested that such consultation be conducted.
Diamond Mountain RMP, as amended by the 2008 Vernal Field Office RMP, Vernal Field Office
Designate the following amounts of land within the specific STSAs as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies: Argyle Canyon STSA: 11,226 acres Asphalt Ridge STSA: 5,435 acres Sunnyside STSA: 16,101 acres
Rationale: As described in Section 2.4.3, all lands within the designated STSAs that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be

TABLE A-2 Approved Changes and Rationales for Land Use Plan Amendments Associated with Alternatives B for Tar Sands[a,b]
available for application for commercial leasing. The acreage estimates presented here represent those lands not excluded from commercial leasing under Alternative B..
Henry Mountain MFP, as amended by the 2008 Richfield Field Office RMP, Richfield Field Office
Designate 24,938 acres of land within the Tar Sand Triangle STSA as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies. *Rationale:* As described in Section 2.4.3, all lands within the designated STSAs that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.
Price River Resource Area MFP, as amended by the 2008 Price Field Office RMP, Price Field Office
Designate the following amounts of land within the specific STSAs as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies: San Rafael STSA: 125 acres Sunnyside STSA: 62,076 acres *Rationale:* As described in Section 2.4.3, all lands within the designated STSAs that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimates presented here represent those lands not excluded from commercial leasing under Alternative B.
San Rafael Resource Area RMP, as amended by the 2008 Price Field Office RMP, Price Field Office
Designate 70,348 acres of land within the San Rafael STSA as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies. *Rationale:* As described in Section 2.4.3, all lands within the designated STSAs that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.

TABLE A-2 Approved Changes and Rationales for Land Use Plan Amendments Associated with Alternatives B for Tar Sands[a,b]
San Juan Resource Area RMP, as amended by the 2008 Richfield and Monticello Field Office RMPs, Monticello Field Office
Designate 7,001 acres of land within the White Canyon STSA as available for application for leasing for commercial tar sands development in accordance with applicable federal and state regulations and BLM policies.
Rationale: As described in Section 2.4.3, all lands within the designated STSAs that are not excluded from commercial leasing by existing laws and regulations, Executive Orders, or administrative land use plan designation, or have not been specifically excluded by the BLM for other reasons, will be available for application for commercial leasing. The acreage estimate presented here represents those lands not excluded from commercial leasing under Alternative B.
[a] Abbreviations: BLM = Bureau of Land Management; FLPMA = Federal Land Policy and Management Act; MFP = management framework plan; NEPA = National Environmental Policy Act; PEIS = programmatic environmental impact statement; RD&D = research, development, and demonstration; RMP = resource management plan; STSA = Special Tar Sand Area. [b] Commercial leasing as used herein includes both commercial and RD&D leasing. [c] The tar sands resources available for application for leasing under Alternatives B and C include deposits located in the designated STSAs described in the geologic reports (minutes) prepared by the U.S. Geological Survey (USGS) in 1980 (USGS 1980a–k) and formalized by Congress in the Combined Hydrocarbon Leasing Act of 1981 (Public Law 97-78). The boundaries of the designated STSAs were determined by the Secretary of the Interior's orders of November 20, 1980 (Volume 45, pages 76800–76801 [45 FR 76800–76801]), and January 21, 1981 (46 FR 6077–6078). [d] A portion of the P.R. Spring STSA extends south from the Vernal Field Office boundary into the Moab Field Office boundary; however, this area is administered by the Vernal Field Office under a Memorandum of Understanding with the Moab Field Office. Under this agreement, the Vernal Field Office administers all resources and programs, including land use planning, for the entire P.R. Spring STSA. Therefore, the Moab Field Office plan is not impacted by this PEIS. Under Alternative B, the acreage in the P.R. Spring STSA includes 14,406 acres of land within the Moab Field Office boundary. Under Alternative C, the acreage in the P.R. Spring STSA includes 1,874 acres of land within the Moab Field Office boundary.

REFERENCES

Note to Reader: This list of references identifies Web pages and associated URLs where reference data were obtained. It is likely that at the time of publication of this PEIS, some of these Web pages may no longer be available or their URL addresses may have changed.

BLM (Bureau of Land Management), 1982, *Hanksville-Henry Mountains Management Framework Plan*, Richfield District, Utah.

BLM, 1985, *Record of Decision and Rangeland Program Summary for the Book Cliffs Resource Management Plan*, Vernal District Office, Utah, May.

BLM, 1986, *Record of Decision for the Kemmerer Resource Management Plan and Rangeland Program Summary Document*, Kemmerer Resource Area, Rock Springs District, Wyo., June.

BLM, 1987, *Grand Junction Resource Area Resource Management Plan and Record of Decision*, Grand Junction District, Colo., Jan.

BLM, 1988, *Record of Decision and Resource Management Plan*, Glenwood Springs Resource Area, Grand Junction District, Colo., June.

BLM, 1989, *Decision Record and Finding of No Significant Impact for Amendment to the Management Framework Plan for the Price River Resource Area*, Moab District, Price River Resource Area, Utah, June.

BLM, 1990, *Great Divide Resource Area Record of Decision and Approved Resource Management Plan*, Rawlins District Office, Great Divide Resource Area, Wyo., Nov.

BLM, 1991a, *San Rafael Final Resource Management Plan*, Moab District, San Rafael Resource Area, Utah, May.

BLM, 1991b, *Resource Management Plan Record of Decision and Rangeland Program Summary for the San Juan Resource Area, Moab District, Utah*, prepared by the Bureau of Land Management, Utah, March.

BLM, 1994, *Diamond Mountain Resource Area Resource Management Plan and Record of Decision*, Vernal District Office, Utah.

BLM, 1997a, *White River Record of Decision and Approved Resource Management Plan*, White River Resource Area, Colo., Craig District, Meeker, Colo., July.

BLM, 1997b, *Record of Decision and Green River Resource Management Plan*, Green River Resource Area, Rock Springs District Office, Wyo., Oct.

BLM, 2006a, *Roan Plateau Planning Area, Including Former Naval Oil Shale Reserves Numbers 1 & 3, Resource Management Plan Amendment & Environmental Impact Statement, Final*, Colorado State Office, Aug. Available at http://www.blm.gov/rmp/co/roanplateau/final_eis_document.htm.

BLM, 2006b, *Record of Decision and Jack Morrow Hills Coordinated Activity Plan/Proposed*

BLM, 2007, *Record of Decision for the Approval of Portions of the Roan Plateau Management Plan Amendment and Environmental Impact Statement*, Glenwood Springs Field Office, Colo., June.

BLM, 2008, Record of Decision for the Resource Management Plan Amendment for Portions of the Roan Plateau Planning Area Designated as Areas of Critical Environmental Concern Public Lands in Garfield County, CO, March 13, 2008**.**

Donnell J.R., 1987, "Storehouse of Energy Minerals in the Piceance Basin," in *Oil Shale, Water Resources, and Valuable Minerals of the Piceance Basin, Colorado: The Challenge and Choices of Development*, O.J. Taylor, ed., U.S. Geological Survey Professional Paper 1310.

Pitman, J.K., 1979, *Isopach, Structure Contour, and Resource Maps of the R-6 Oil Shale Zone, Green River Formation, Piceance Creek Basin, Colorado*, U.S. Geological Survey, Miscellaneous Field Investigations Map MF-1069.

Pitman, J.K., and R.C. Johnson, 1978, *Isopach, Structure Contour, and Resource Maps of the Mahogany Oil-Shale Zone, Green River Formation, Piceance Creek Basin, Colorado*, U.S. Geological Survey, Miscellaneous Field Investigations Map MF-958.

Pitman, J.K., et al., 1989, *Thickness, Oil-Yield, and Kriged Resource Estimates for the Eocene Green River Formation, Piceance Creek Basin, Colorado*, U.S. Geological Survey, Oil and Gas Chart OC-132.

Tabet, D., 2007, personal communication from Tabet (Utah Geological Survey, Salt Lake City, Utah) to S.J. Thompson (Bureau of Land Management, Washington, D.C., Office), Dec. 14.

USGS (U.S. Geological Survey), 1980a, *Argyle Canyon–Willow Creek, Utah Tar Sand Leasing Minutes No. 9*, Minutes of the Mineral Land Evaluation Committee, Nov. 10.

USGS, 1980b, *Asphalt Ridge–Whiterocks and Vicinity, Utah Tar Sand Leasing Minutes No. 3*, Minutes of the Mineral Land Evaluation Committee, Sept. 23.

USGS, 1980c, *Circle Cliffs East and West Flanks, Utah Tar Sand Leasing Minutes No. 5*, Minutes of the Mineral Land Evaluation Committee, Sept. 23.

USGS, 1980d, *Hill Creek, Utah Tar Sand Leasing Minutes No. 6*, Minutes of the Mineral Land Evaluation Committee, Nov. 10.

APPENDIX B:

POTENTIAL CONSERVATION MEASURES FOR FUTURE OIL SHALE AND TAR SANDS LEASING AND DEVELOPMENT

PROPOSED CONSERVATION MEASURES FOR OIL SHALE AND TAR SANDS LEASING AND DEVELOPMENT CONSERVATION MEASURES

The following conservation measures were developed for the oil shale and tar sands program through consultation between the U.S. Department of the Interior, Bureau of Land Management (BLM), and the U.S. Fish and Wildlife Service (U.S. FWS) to support the conservation of species listed under the Endangered Species Act (ESA). For purposes of the programmatic environmental impact statement (PEIS), and to provide the public and any potential lessees with some sense of what conservation measures might be imposed, if warranted, the conservation measures that have been developed pursuant to the Agreement are presented in Appendix B and are assumed to be generally consistent with existing conservation agreements, recovery plans, and completed consultations. It is the intent of the BLM and the U.S. FWS to ensure that the conservation measures presented here are consistent with those currently applied to other land management actions where associated impacts are similar. However, it is presumed that potential impacts from development alternatives described in the PEIS are likely to vary in scale and intensity when compared with land management actions previously considered (e.g., oil and gas exploration and production, surface mining, and underground mining). Hence, final conservation measures will be developed commensurate with the anticipated level of impact on the selected alternatives and will be consistent with agency policies. For instance, current BLM guidance on similar actions (e.g., projects involved in development of fluid mineral resources) requires that the least restrictive stipulation that effectively accomplishes the resource objectives or resource uses for a given alternative should be used in order that a project remain in compliance with the ESA.

Conservation Measures Generally Applicable to All Listed Species

1. Surveys will be required prior to operations unless species occupancy and distribution information for the area is complete and available. All surveys must be conducted by qualified individual(s) approved by BLM. For bald eagles and Mexican spotted owls (and other raptors), surveys should be conducted up to 1 mi from the proposed disturbance to determine nest and roost status and will be conducted in accordance with existing guidelines.
2. Lease activities, upon initiation of implementation, will require monitoring throughout the duration of the project. To ensure that the desired results are being achieved, mitigation measures will be evaluated and, if necessary, Section 7 consultation reinitiated.
3. Water production will be managed to ensure maintenance or enhancement of riparian habitat and surface water quality.
4. Avoid loss of riparian and wetland habitats where possible with mining and in situ processing. Minimize loss of riparian and wetland habitat with roads, pipelines, and other ancillary facilities. Restore wetland and riparian habitat when avoidance with facilities is not possible. Any incidental take statement (if warranted) will need to be based on an estimate of avoidance and if unavoidable, quantify extent of potential take.

5. Transportation management plans should be developed and used as a means for minimizing habitat fragmentation and destruction.

Species Specific Conservation Measures

Colorado River Endangered Fishes—Bonytail, Colorado Pikeminnow, Humpback Chub, Razorback Sucker

1. Within 0.5 mi of critical habitat; a) avoid all mining and drilling activities and, b) minimize surface disturbance and vegetation removal for roads, pipelines, water diversion and acquisition facilities, and other ancillary facilities. When surface disturbance for any of the features in item b above is necessitated within 0.5 mi of critical habitat, the BLM should confer with U.S. FWS to minimize potential impacts to critical habitat and/or endangered fish.
2. For tributaries to the major rivers that contain listed fish species or their designated critical habitat, drilling or mining will not occur within the 100-year floodplains or riparian corridors that are within the zone of influence of the major rivers.
3. To avoid excessive stream sedimentation during the spawning period, avoid construction activities (e.g., for roads, pipelines, utilities) within critical habitat from April 1 through September 30 of any year.
4. Avoid the installation of water diversion structures that may pose a risk to the Colorado River fishes or their critical habitat (e.g., minimize entrainment or impingement by using screens, baffles).
5. Avoid the release of selenium into surface waters, and where possible, implement measures to reduce selenium concentrations in the Upper Colorado River Basin. For example, decrease erosion in areas with selenium-rich soils (e.g., shale-derived soils), maintain adequate vegetation cover on work areas where possible, control ephemeral streamflow with water spreading structures, do not irrigate in areas with selenium-rich soils, and avoid impacting selenium-rich soils on steep slopes (>50%). If selenium-rich slag/waste piles are created, they should be isolated and located so that this material does not reach critical habitat.
6. All new pipelines and other controlled surface uses crossing any critical or occupied habitat of the Colorado River fishes will adhere to the following stipulations:
    a. Pipelines shall not be constructed in known spawning sites or backwaters.
    b. No work in the active river channel will take place between July 1 and September 30. This will avoid adverse affects from sedimentation during spawning, and when larval fishes are drifting in the river channel.
    c. After construction, the streambed will be returned to preconstruction contours.
    d. Pipelines transporting substances other than water will have automatic shut-off valves.
    e. Pipelines transporting substances other than water will be double-walled where they cross the 100-year floodplain and river.
    f. A spill/leak contingency plan will be developed prior to pipeline use.
7. Implement the Utah Oil and Gas Pipeline Crossing Guidance (from BLM National Science and Technology Center).

8. If water is obtained for project-related activities from any surface water source (stream, pond, etc.), or from any groundwater source that has a connection to surface water, the BLM will require that all water withdrawals undergo appropriate Section 7 consultation in accordance with procedures existing at the time of the proposed action. Any applicant for a water withdrawal less than the Colorado River Recovery Program sufficient progress threshold (in 2007, 4,500 ac-ft/yr) shall pay the appropriate depletion fee, depending on whether the depletion is a historical or new depletion. Only new depletions over 100 ac-ft/yr are subject to the fee requirement. Projects withdrawing more than the sufficient progress threshold shall complete an additional item from the Colorado River Recovery Implementation Plan Recovery Action Plan as agreed to by the U.S. FWS (new depletions would also be subject to the depletion fee).

Colorado River Cutthroat Trout

1. Maintain a minimum 0.25-mi buffer (both sides) of occupied Colorado River cutthroat trout streams and upstream tributaries. The buffer would be extended beyond the 0.25-mi minimum in areas where slopes exceed 50%; the buffer would extend out to where the land is relatively level. The idea is to keep any sediment from reaching the occupied Colorado River cutthroat trout reaches by making sure that mining and drilling take place on flat ground in areas where Colorado River cutthroat trout occur. Linear features such as roads and pipelines may be allowed within the buffer zones. Keep in mind that there are only a handful of known Colorado River cutthroat trout populations in the oil shale and tar sands planning area, and these conservation measures would affect only a very small portion of the area proposed for leasing (5% or less).
2. No water withdrawals will occur from waters occupied by Colorado River cutthroat trout, based on current information.
3. Oil shale and tar sands activities will be consistent with the "Conservation Agreement for Colorado River Cutthroat Trout (Oncorhynchus clarkia pleuriticus)" for the states of Colorado, Utah, and Wyoming (June 2006).

Bald Eagle

1. A year-round avoidance of 0.5-mi of known bald eagle nests if topographic and/or vegetative buffers exist or of areas within 1 mi if nest is in line of sight of activity will be established. This avoidance requirement may be adjusted based on a demonstration of nonoccupancy during the last 7 years. Any modification will be in coordination with U.S. FWS.
2. A year-round avoidance of 0.25-mi if topographic and/or vegetation buffers exist to
3. 1-mi if roost is in line of sight of activity will be established for all known bald eagle winter roost sites. This avoidance requirement may be adjusted based on a demonstration of nonoccupancy during the last 7 years. Any modification will be in coordination with the U.S. FWS.
4. Avoid loss or disturbance to riparian habitats containing cottonwoods, conifers, or other tree species that, when mature, may provide roost or nest trees for bald eagles. Minimize loss of any other riparian plant species (including box elders, willows, and river birch).
5. The U.S. FWS recommends that the BLM and contractors be informed of the risk or potential for wildlife vehicle collision (particularly bald eagles) in the project area and

requested to limit vehicle speed to reduce such potential. In addition, contractors should move any big game carcasses found along project area roads away from the roadway by 30 ft (generally 60-ft-wide ROWs) to minimize the potential for bald eagle and vehicle collisions while eagles feed on roadside carrion. Furthermore, the BLM and contractors, in an additional effort to protect bald eagles, will coordinate with appropriate officials for necessary removal of any big game carcasses along county or state roads.

6. To preclude bald eagles or other raptors from nesting on human-made structures such as cell phone towers and condensate tanks and to avoid impeding operation or maintenance activities, install antiperching devices on structures to discourage use by eagles and other raptors.
7. Bury electric lines, where practicable, especially in areas of high bald eagle use. If lines cannot be buried, power lines will be built at a minimum, to standards identified by the Avian Power Line Interaction Committee (2006) to minimize electrocution potential (see Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006; available at http://www.eei.org/products_and_services/descriptions_and_access/suggested_pract.htm). Moreover, power lines will be built according to the additional specifications listed below. The project proponent should ensure that these additional standards to minimize bald eagle mortality associated with electric utility distribution lines will be incorporated into the stipulations for all project actions. It should be noted that these measures vary in their effectiveness to minimize mortality, and may be modified as they are tested in the field and laboratory. Local habitat conditions should be considered in their use. The U.S. FWS does not endorse any specific product that can be used to prevent and/or minimize mortality. The following recommendations should be incorporated into the design plan of new distribution lines or when modifying existing facilities.

For new distribution lines and facilities:

a. Raptor-safe structures (e.g., with increased conductor-conductor spacing) that address adequate spacing for bald eagles (i.e., minimum of 60 in. for bald eagles) are to be used.
b. Equipment installations (e.g., overhead service transformers, capacitors, reclosers) should be made bald-eagle safe (e.g., by insulating the bushing conductor terminations and by using covered jumper conductors).
c. Jumper conductor installations (e.g., corner and tap structures) should be made bald-eagle safe by using covered jumpers or providing adequate separation.
d. Arrestor and cutout covers should be employed when necessary.
e. Lines should avoid high avian-use areas such as wetlands, prairie dog towns, and grouse leks.

For modification of existing facilities:

a. Problem structures that include dead ends, tap or junction poles, transformers, reclosers and capacitor banks, or other structures with less than 60 in. between conductors or a conductor and ground should be identified and rectified.
b. Exposed jumpers should be covered.
c. Any pole-top ground wires should be capped.
d. Grounded guy wires should be isolated by installing an insulating link.

e. On transformers, install insulated bushing covers, covered jumpers, and cutout covers and arrestor covers, if necessary.

f. When bald eagle mortalities occur on existing lines and structures, bald eagle protection measures should be applied (e.g., modify for raptor-safe construction, install safe perches or perching deterrents, nesting platforms or nest-deterrent devices).

g. In areas where midspan collisions are a problem, install line-marking devices that have been proven effective. All transmission lines that span streams and rivers should maintain proper spacing and have markers installed.

h. Poles will be moved if topographic issues or impacts to vegetative or wildlife resources were identified at the construction site.

8. When constructing communication towers, refer to the U.S. FWS Guidance on the Siting, Construction, Operation, and Decommissioning of Communication Towers, which can be found at http://www.fws.gov/migratory birds/issues/towers/comtow.html.

Mexican Spotted Owl

1. Within the range of the Mexican spotted owl, avoid surface disturbance where suitable nesting habitat for the species occurs (steep-walled, rocky canyons, typically with a closed-canopy of mature, mixed coniferous forest) (see the recovery plan [U.S. FWS 1995] for the spotted owl, particularly Table III.B.1). (The range of the Mexican spotted owl published in the recovery plan should be extended to include the individuals observed within Dinosaur National Monument.)
2. Within areas of oil shale and tar sands potential in Utah and Colorado, prior to leasing of mineral rights, the Bureau will develop a map of BLM lands with Mexican spotted owl habitat that is comprised of areas with steep slopes (>40% slope), canyons and rocky outcrops overlapping dense, mixed-conifer vegetation (canopy cover greater than 40% if data are available). This mapping effort would be considered a broad-based approach from which more specific and intensified habitat analyses could be initiated.
3. Where possible, conduct field surveys for the Mexican spotted owl in areas of suitable habitat in order to gain a better understanding of Mexican spotted owl distribution and status throughout areas of oil shale and tar sands potential in Utah and Colorado. Field surveys should emphasize areas that have not been previously or recently surveyed. Areas of particular interest include the Book Cliffs and areas surrounding Dinosaur National Monument.
4. Unless species occupancy and distribution information is complete and available, field surveys shall occur in areas where proposed human activities may remove or modify Mexican spotted owl habitat or otherwise adversely affect the species. Current U.S. FWS survey protocol will be followed. Existing protocols require that four surveys be conducted each season for two consecutive seasons. All surveys must be conducted by a qualified individual(s) approved by BLM.
5. Assess habitat suitability for both nesting and foraging using accepted habitat models in conjunction with field reviews. Apply the conservation measures below if project activities occur within 0.5 mi of suitable owl habitat. Determine potential effects of actions to owls and their habitat. Document type of activity, acreage and location of direct habitat impacts, and type and extent of indirect impacts relative to location of suitable owl habitat. Document if

action is temporary or permanent. A temporary action is completed prior to the following breeding season leaving no permanent structures and resulting in no permanent habitat loss. A permanent action continues for more than one breeding season and/or causes a loss of owl habitat or displaces owls through disturbances (i.e., creation of a permanent structure).

6. For all temporary actions that may impact owls or suitable habitat:
   a. If the action occurs entirely outside of the owl breeding season (e.g., March 1 to August 31 in Utah), and leaves no permanent structure or permanent habitat disturbance, action can proceed without an occupancy survey.
   b. If action will occur during a breeding season, a survey for owls should be performed prior to commencing activity. If owls are found, activity must be delayed until outside of the breeding season.
   c. Rehabilitate access routes created by the project through such means as raking out scars, revegetation, gating access points, etc.
7. For all permanent actions that may impact owls or suitable habitat:
   a. Survey two consecutive years for owls according to accepted protocol prior to commencing activities.
   b. If owls are found, no actions will occur within 0.5 mi of identified nest site. If the nest site is unknown, no activity will occur within the designated protected activity center.
   c. Avoid drilling and permanent structures within 0.5 mi of suitable habitat unless surveyed and not occupied.
   d. Reduce noise emissions (e.g., use hospital-grade mufflers) to 45 dBA at 0.5-mi from suitable habitat, including canyon rims. Placement of permanent noise-generating facilities should be determined by a noise analysis to ensure that noise does not encroach upon a 0.5-mi buffer for suitable habitat, including canyon rims.
   e. Limit disturbances to and within suitable habitat by staying on approved routes.
   f. Limit new access routes created by the project.
8. Avoid surface disturbance (e.g., facilities, roads, pipelines) and vegetation removal within designated critical habitat where any of the primary constituent elements are present at the project scale.

Southwestern Willow Flycatcher

1. In project areas potentially occupied by the southwestern willow flycatcher, surveys for the southwestern willow flycatcher should be conducted.
2. Project activities will maintain a 300-ft buffer from suitable riparian habitat year long.
3. Project activities within 0.25 mi of occupied breeding habitat will not occur during the breeding season of May 1 to August 15.
4. The U.S. FWS recommends postactivity surveys for southwestern willow flycatchers for any project or mitigation areas authorized by the BLM. Surveys must be conducted by individuals who have been properly trained in approved survey protocol. Surveyors must be familiar with and adhere to the general survey techniques and guidelines in Sogge et al. (1997). Flycatcher survey training must be completed prior to being permitted to conduct surveys. All reporting requirements must be followed.

5. For projects that may alter or destroy habitat that are in or near occupied, suitable, potentially suitable, or potential habitat, the U.S. FWS recommends using fencing instead of flagging to delineate the project area. Fencing is more visible to construction workers and more clearly demarcates the construction zone.
6. If nest parasitism is monitored, when flycatcher nest parasitism exceeds 10% of surveyed nests, consult with U.S. FWS to implement measures to reduce parasitism rates.

Black-footed Ferret

1. Prairie dog towns potentially occupied by black-footed ferrets or within 1.5 km of prairie dog towns occupied by black-footed ferrets should be surveyed and mapped by qualified individuals approved by BLM before surface-disturbing activities are conducted. Surveys should be in accordance with the 1989 Black Footed Ferret Survey Protocol or other methods upon U.S. FWS review and approval. Mapping should be conducted in accordance with Biggins et al. (1993). Should black-footed ferrets or signs of them be observed within a prairie dog town or complex where project-related activities are proposed, the federal agency shall coordinate Section 7 consultation or conferencing with the U.S. FWS on the proposed action. This measure applies to: (1) all habitats occupied by ferrets and (2) all suitable habitats within the oil shale and tar sands area. The BLM will confer with the appropriate U.S. FWS Field Office for definitions of suitable habitat within each state.

   In Wyoming (non-10(j) populations), in the event that no ferrets or signs of them are observed during the survey, ground-disturbing activities may occur within 1 year of the date of survey completion within the town surveyed. However, surveys should be completed as close to the date of project initiation as possible to avoid the possibility of a ferret moving into the area after surveys have cleared the area. Alternatively, all suitable habitat within the entire complex in which the town is located may be surveyed and, if no ferrets or sign are found, the complex will be designated "ferret-free" and no further Section 7 review for the black-footed ferret will be required for activities occurring within any prairie dog town within the complex. Future observations of ferrets or their sign shall, however, require reinitiation of Section 7 consultation. The BLM and the project proponent are encouraged to work with the U.S. FWS to block clear all prairie dog towns within or contiguous with the analysis area. Future actions, including maintenance, work over, and reclamation within towns previously cleared of ferrets may require additional survey work unless the entire complex containing the town has been block cleared.

   Results of all surveys shall be reported to the appropriate U.S. FWS Field Office, including maps of areas surveyed, surveyor qualifications, method of survey, and length of survey, date, weather, snow cover, survey results, and copies of field data sheets.
2. Where possible, avoid placement of structures that provide suitable nest or perch sites for avian predators within ferret habitat. Ensure that garbage is contained to prevent attraction by coyotes, skunks, and other predators. This measure applies to: (1) all habitats occupied by ferrets and (2) all suitable habitat within the oil shale and tar sands area. The BLM will confer with the appropriate U.S. FWS Field Office definitions of suitable habitat within each state.
3. Where possible, post and encourage reduced vehicle speeds at night on roads in or near occupied habitat to reduce chances of vehicular mortalities.

4. Ensure that reclamation is conducted so that impacts to active prairie dog colonies are minimized. This measure applies to all suitable habitats within the oil shale and tar sands area. The BLM will confer with the appropriate U.S. FWS Field Office for definitions of suitable habitat within each state.
5. In areas where black-footed ferrets could be encountered, employees, operators, and contractors shall be educated on the natural history of the black-footed ferret, identification of ferrets and their sign, potential impacts for disease transmission from dogs to ferrets, activities that may affect ferret behavior, and ways to minimize these effects. This measure applies to all suitable habitats within the oil shale and tar sands area. The BLM will confer with the appropriate U.S. FWS Field Office for definitions of suitable habitat within each state.
6. Observations of black-footed ferrets, their sign, or carcasses shall be reported to the nearest BLM and U.S. FWS office within 24 hours. This measure applies throughout the oil shale and tar sands area.
7. Encourage the use of White-tailed Prairie Dog Conservation Measures (as revised), in white-tailed prairie dog habitat.
8. Whenever possible, project activities will be designed to avoid adverse influence on prairie dog habitat occupied by black-footed ferrets. If adverse impacts to occupied prairie dog habitat are unavoidable, activities will be designed in coordination with the U.S. FWS to (1) impact the smallest area practicable, (2) impact those areas with the lowest prairie dog densities, and (3) minimize habitat fragmentation in prairie dog towns occupied by black-footed ferrets or those towns suitable for reintroduction. Offsite mitigation may also be recommended. Impacts to black-footed ferret habitat will be monitored to evaluate cumulative effects.
9. Whenever possible, project activities will be designed to not adversely impact black-footed ferret populations. A monitoring program will be developed, when necessary, to evaluate impacts. This measure applies to all habitats occupied by ferrets within the oil shale and tar sands area.
10. Project activities in Uintah and Duchesne Counties, Utah, will be conducted consistent with the Division of Wildlife Resources' 2007 Northeastern Region Black-Footed Ferret Management Plan and the BLM's 1999 Book Cliffs Resource Area Management Plan Amendment for Black-footed Ferret Reintroduction, Coyote Basin Area, Utah.
11. This measure applies specifically to the black-footed ferret management area and subcomplexes described by the Utah Division of Wildlife Resources' 2007 Northeastern Region Black-Footed Ferret Management Plan. Within the boundaries of the three subcomplexes (Coyote Basin, Snake John Reef, Bohemian Bottom), activities involving the development or construction of permanent surface disturbances will be prohibited within one-eighth mi of the home range of any black-footed ferret. Within the boundaries of the management area, if a ferret observation is recorded, or has been recorded within the last 5 years, no surface disturbance will be allowed within 0.44 mi (about 700 m) of the observation location if the following two criteria are met: (1) the ferret is/was observed in suitable habitat (the BLM will confer with the appropriate U.S. FWS Field Office for definitions of suitable habitat within the management area) and (2) the ferret has established residency in the immediate locale (i.e., a documented home range has been established). The

appropriate size of the protected area surrounding a ferret's home range may be adjusted in coordination with the U.S. FWS according to future research and new information, and pursuant to the relevant local, site-specific species management plan, if available.

Canada Lynx

1. Within a Lynx Analysis Unit (LAU), ensure that mapping of lynx habitat, nonhabitat, and denning habitat occurs. Also map foraging habitat, and topographic features important for lynx movement. Identify whether all lynx habitat within an LAU is in suitable or unsuitable condition. May involve interagency coordination where LAUs cross administrative boundaries.
2. Limit disturbance within each LAU to 30% of the suitable habitat within the LAU. If 30% of the habitat within an LAU is currently in unsuitable condition, no further reduction of suitable conditions shall occur as a result of management activities. Map oil and gas production and transmission facilities, mining activities and facilities, dams, timber harvest, and agricultural lands on public lands and evaluate projects on adjacent private lands, in order to assess cumulative effects. This will involve interagency coordination where LAUs cross administrative boundaries, primarily with the U.S. Forest Service.
3. Management actions shall not change more than 15% of lynx habitat within an LAU to an unsuitable condition within a 10-year period. This will involve interagency coordination where LAUs cross administrative boundaries.
4. Maintain denning habitat in patches generally larger than 5 acres, composing at least 10% of lynx habitat. Where less than 10% is currently present within an LAU, defer any management actions that would delay development of denning habitat structure. This will involve interagency coordination where LAUs cross administrative boundaries.
5. Ensure that key linkage areas that may be important in providing landscape connectivity within and between geographic areas across all ownerships are identified, using best available science.
6. Ensure that habitat connectivity within and between LAUs is maintained.
7. Document lynx observations (tracks, sightings, along with date, location, and habitat) and provide these to the state natural heritage database, and request an annual update from them on all sightings for review.
8. In the event of a large wildfire, ensure that a postdisturbance assessment prior to salvage harvest is conducted, particularly in stands that were formerly in late successional stages, to evaluate potential for lynx denning and foraging habitat.
9. On projects where over-snow access is required, ensure that use is restricted to designated routes.

   Within lynx habitat, the BLM shall ensure that key linkage areas and potential highway crossing areas are identified, using best available science.

10. The BLM shall ensure that proposed land exchanges, land sales, and special use permits are evaluated for effects on key linkage areas.
11. If activities are proposed in lynx habitat, the BLM shall ensure that stipulations and conditions of approval for limitations on the timing of activities and surface use and occupancy are developed for leasing, and that more site-specific conditions of approval are

developed at the permitting stage. Examples include requiring that activities not be conducted at night, when lynx are active; and avoiding activity near denning habitat during the breeding season (April or May to July) to protect vulnerable kittens.

12. Provide for the continuation of foraging habitat in proximity to denning habitat.
13. Provide habitat conditions through time that support dense horizontal understory cover and high densities of snowshoe hares. This includes, for example, mature multistoried conifer vegetation. Focus vegetation management, including timber harvest and the use of prescribed fire, in areas that have potential to improve snowshoe hare habitat (dense horizontal cover) but that presently have poorly developed understories that have little value to snowshoe hares.
14. Determine where high total road densities (>2 mi per mi2) coincide with lynx habitat, and prioritize roads for seasonal restrictions or reclamation in those areas.
15. Limit public use on temporary roads constructed for project activities. Design new roads, especially the entrance, for effective closure upon completion of project activities. Upon project completion, reclaim or obliterate these roads.
16. Minimize building of roads directly on ridgetops or areas identified as important for lynx habitat connectivity.
17. Where needed, develop measures such as wildlife fencing and associated underpasses or overpasses to reduce mortality risk.
18. Protect existing snowshoe hare and red squirrel habitat.
19. Use remote sensing equipment and bunch maintenance activities to reduce activity in the area as well as reduce the compaction of snow.

Threatened, Endangered, and Proposed Plants

1. Surveys for listed plants will be conducted prior to ground disturbance wherever there is the potential for their occurrence in projects areas. Surveys in suitable habitat should be conducted when the plant can be detected, and during appropriate flowering periods. Documentation should include, but not be limited to, individual plant locations and suitable habitat distributions, and all surveys must be conducted by qualified individuals approved by the BLM. Surveys should extent at least 200 m beyond the perimeter of work areas. Surveys are generally valid for one year.
2. Consistent with existing or current recovery plans, the proposed action will be designed to support recovery objectives. For example:
    a. Designs will prevent surface runoff from work areas from entering plant occupied habitat.
    b. Construction will occur below and away from the slope of occupied habitat, where feasible, to avoid slope failure or accelerated erosion;
    c. No surface disturbance will occur within 100 m of a listed plant. If an area that is closer than 200 m from a listed plant must be disturbed (e.g., for mining, drilling, roads, pipelines), the edge of any area to be disturbed that is between 100 to 200 m of any listed plant should be temporarily fenced to keep disturbance from further approaching the listed plant's habitat. To avoid working in listed plant habitat and drawing attention to

listed plants, the edge of disturbance should be fenced, not the nearby plant population. This measure could be modified with the approval of BLM and U.S. FWS.

d. If a surface disturbance must be located less than 200 m from a listed plant, appropriate dust-abatement actions, commensurate with the level of use, must be taken in consultation with the U.S. FWS and BLM.

3. If ground-disturbing activities occur within 200 m of listed plants, the plants should be monitored in accordance with the Measuring and Monitoring of Plant Populations, BLM Technical Reference 1730-1, 1998, during the blooming period for plant health, vigor, and the occurrence of transported dust from project activities. Data should also include a site description with GPS coordinates, size of the area occupied, estimated number and age range of plants, and evidence of habitat disturbance, plant damage, or mortality. Post-construction monitoring for invasive species must also be conducted. Annual reports should be provided to the BLM and the U.S. FWS.
4. "Translocation" (transplanting) shall not be used as a rationale to defend a "not likely to adversely affect" or a "no effect" determination for endangered or threatened species.
5. Vehicle travel will avoid suitable and occupied habitat.
6. In consultation with U.S. FWS, evaluate projects that remove topsoil in areas of suitable habitat for listed species shall set aside and replace the topsoil when ground work is completed to preserve the seed bank and associated mycorrhizal species, and to discourage invasive species.
7. When possible, revegetation should be limited to native species that will not compete with the rare species at that site. Revegetation projects should require a site-specific plan for areas with listed plant species, to be developed in consultation with the BLM and the U.S. FWS.
8. Protective stipulations for endangered or threatened species should include appropriate measures to protect pollinator species that have been identified.
9. When listed plant species are near project areas, dust control measures should be employed to minimize fugitive dust deposition on plant surfaces.
10. When listed plants are near project areas, appropriate dust control measures will be determined in consultation with the BLM and the U.S. FWS to minimize fugitive dust deposition on plant surfaces.
11. For riparian and wetland-associated species (e.g., Ute ladies'-tresses), ensure that water extraction or disposal practices do not result in a change of hydrologic regime outside of the range of natural variability.
12. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat. Overspray from evaporation ponds should be located such that it falls at least 200 m from listed plant locations, if these are necessary.

Species Determined Not To Be within the Action Area

Gray Wolf (Per discussion with U.S. FWS, wolves are not within the action area, so they will not be addressed in the PEIS or biological assessment [BA].)

Candidate Animal Species Determined To Be within the Action Area

Yellow-Billed Cuckoo (This species is within the action area only in Utah, and because it is a candidate species, it will not be addressed in the BA, but these conservation measures will be in the PEIS.)

1. Construction of roads, pipelines, and power lines in riparian habitat should not occur from June 1 through August 1.
2. Prohibit permanent surface-disturbing activities within 0.25 mi of any suitable yellow-billed cuckoo habitat. Exceptions should be evaluated on a case-by-case basis to avoid adverse impacts.
3. To avoid direct impacts or changes in riparian habitat, do not adversely modify stream channel morphology or annual streamflow regimes in suitable habitat.
4. Prohibit non-surface-disturbing activities within yellow-billed cuckoo habitat that will have adverse effects to the yellow-billed cuckoo or its habitat (e.g., boat and raft landings, outfitting camps, firewood collection) within 0.25 mi of occupied habitat.
5. Chemical insecticides shall not be applied within 0.25 mi of yellow-billed cuckoo occupied habitat.
6. Prohibit herbicide application for grasshopper control in yellow-billed cuckoo habitat within 0.25 mi of any active nests.
7. If technically feasible, biological control should be used in place of chemical pest control.

References

USGS, 1980e, *Pariette, Utah Tar Sand Leasing Minutes*, Minutes of the Mineral Land Evaluation Committee, Nov. 10.

USGS, 1980f, *P.R. Spring, Utah Tar Sand Leasing Minutes*, Minutes of the Mineral Land Evaluation Committee, Sept. 23.

USGS, 1980g, *Raven Ridge–Rim Rock and Vicinity, Utah Tar Sand Leasing Minutes No. 8*, Minutes of the Mineral Land Evaluation Committee, Nov. 10

USGS, 1980h, *San Rafael Swell, Utah Tar Sand Leasing Minutes No. 7*, Minutes of the Mineral Land Evaluation Committee, Nov. 10.

USGS, 1980i, *Sunnyside and Vicinity, Utah Tar Sand Leasing Minutes No. 4*, Minutes of the Mineral Land Evaluation Committee, Sept. 23.

USGS, 1980j, *Tar Sand Triangle, Utah Tar Sand Leasing Minutes No. 2*, Minutes of the Mineral Land Evaluation Committee, Sept. 23.

USGS, 1980k, *White Canyon, Utah Tar Sand Leasing Minutes No. 11*, Minutes of the Mineral Land Evaluation Committee, Nov. 10.

Wiig, S., 2006a, personal communication from Wiig (BLM Rock Springs Field Office, Wyo.) to P. Perlowitz (BLM Wyoming State Office, Cheyenne), June 13.

Wiig, S., 2006b, personal communication from Wiig (BLM Rock Springs Field Office, Wyo.) to K.P. Smith (Argonne National Laboratory, Lakewood, Colo.), June 27.