DRAFT

Environmental Assessment

Emerald Mountain Land Exchange

Routt & Moffat Counties, Colorado
Number COC-66879

prepared for:

U.S. Department of Interior

Bureau of Land Management, Little Snake Field Office
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NOTE: Due to the appraisal equalization requirement, the offered Emerald Mountain Parcel will total approximately 4,400 acres and the offered federal parcels will total 127 parcels at approximately 15,500 acres.

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1.0 Introduction

The U.S. Department of the Interior Bureau of Land Management's (BLM) Little Snake Field Office and the Colorado State Land Board (SLB) have proposed a land exchange. This Environmental Assessment (EA) describes the proposed land exchange, documents the purpose and need for the proposed action, identifies public issues and management concerns, describes the alternatives considered, and discusses the relevant aspects of the affected environment for each of the land exchange parcels for 22 resource categories. In addition, it evaluates the environmental consequences of the proposal and its consistency with the BLM Little Snake Field Office Resource Management Plan (RMP) and record of decision issued by the BLM in June 1989. This document also presents and evaluates management alternatives for the Emerald Mountain parcel to be acquired by the BLM.

A Biological Assessment for the Emerald Mountain Land Exchange was completed in May 2005 (Western Ecological Resource, 2005), which includes specific details on the location, topography, waters of the U.S. features, and vegetation types of each of the selected federal parcels and the offered non-federal parcel. It also evaluates the potential presence of federally listed threatened, endangered, and candidate species or their habitat on the land exchange parcels, and evaluates the direct, indirect, and cumulative effects of the proposed land exchange on these sensitive species and their habitat. The Biological Assessment determined that the proposed land exchange would have no impact on the boreal toad or yellow-billed cuckoo, no effect on the bald eagle, and may affect, but is not likely to adversely affect the Canada lynx. The U.S. Fish and Wildlife Service concurred with this determination for Canada lynx in a July 29, 2005 correspondence which is included in Appendix A of this Environmental Assessment. The Biological Assessment is available for review at the BLM Little Snake Field Office in Craig, Colorado.

This Environmental Assessment complies with the requirements of the National Environmental Policy Act (NEPA) of 1969, as amended, and the Office of the President's Council on Environmental Quality regulations for implementing the Act. It analyzes the potential environmental effects of an exchange of lands managed by the U.S. Department of the Interior Bureau of Land Management (BLM) Little Snake Field Office in Routt County, Colorado for land managed by the State Land Board (SLB).

Please note, Tables are located in Section 13 and Figures are located either in Section 14 or in the back folder.

2.0 Proposed Actions

The BLM would exchange 127 parcels of land totaling 15,528 acres (Table 2.0-1) for a 4,404 acre SLB parcel located on Emerald Mountain, southwest of Steamboat Springs, Colorado (Table 2.0-2; Figure 1). The BLM parcels are distributed throughout Routt County, and two parcels along the county boundary have 201 acres in Moffat County. In order to equalize the agreed upon values of the lands involved in this exchange, the exchange proposal may be modified by excluding lands and/or cash equalization to comply with 43 CFR 2201.6 after completion of the appraisals.

The proposed exchange would be consistent with the planning goals set forth in the approved Little Snake River Resource Management Plan (RMP) record of decision issued in June 1989 and as amended in 1991. Page 29 states: "Consolidation of public land patterns into more manageable blocks would improve management efficiency."

A second proposed action is to amend the Little Snake RMP to allow for acquisition of the Emerald Mountain parcel and develop management decisions for it and nearby public lands, if the proposed exchange is approved. Nearby public lands are included in this proposed action because the effect of the proposed exchange may warrant changing the land tenure decisions

from disposal to retention. Four alternative management plans are described and evaluated for impacts in Section 9.0. The RMP would also be amended to allow acquisition of the Emerald Mountain parcel. The majority of lands in the RMP planning unit surrounding Emerald Mountain are identified for disposal. This amendment to the existing RMP would identify Emerald Mountain as an acquisition area to consolidate federal lands. The Emerald Mountain parcel would then become a retention area to be managed under multiple use concepts.

3.0 Purpose and Need

The BLM is authorized to complete land exchanges under Section 206 of the Federal Land Policy and Management Act as amended (FLPMA) after a determination is made that the public interest would be served. When considering the public interest, the authorized BLM officer shall give full consideration to 1) the opportunity to achieve better management of federal lands; 2) the needs of the state and local residents and their economics; and 3) securing important resource management objectives including, but not limited to, protection of fish and wildlife habitat, riparian habitat, river frontage, cultural resources, recreation opportunities, and watersheds.

In the RMP, most of Routt County was defined as a "retention" zone in which the existing land base is to be managed under multiple use concepts. The RMP provided that within this zone, "all land tenure adjustment actions (including recreation and public purposes [R&PP] actions and exchanges), except sales under Section 203 of FLPMA, would be considered on a case-by-case basis, if the public interest would be served" (page 29). The RMP also specifically identified 6,670 acres of Federal land in a "disposal" zone which provides for disposal land tenure adjustments on those lands that meet the criteria for disposal under applicable authority. The land exchange proposal includes lands located in both zones. Prior to developing the land exchange proposal, the BLM identified land in Routt County that is considered potentially suitable for disposal based on the planning goals established by the RMP.

Emerald Mountain, the non-federal parcel owned by SLB, is considered a valuable asset to Steamboat Springs and other tourist-based communities in Routt County. Therefore, the BLM and SLB cooperatively developed the proposed land exchange to consolidate public and private land ownership patterns, increase public recreational opportunities in Routt County, and acquire and protect important wildlife habitat.

3.1 Consolidate Public Land Ownership Patterns

If acquired, the offered non-federal lands would provide BLM with a large contiguous block of federal land that would result in more efficient management and increased public access for dispersed recreation and hunting.

The majority of the selected federal parcels are generally surrounded by private land and have no public access, and are therefore difficult for the BLM to manage. The private individuals participating in this land exchange and acquiring these parcels are adjacent or surrounding landowners, and most hold the active grazing permits on the identified federal lands. This is consistent with the stated objective of the RMP, which calls for the BLM to process, initiate, and favor action for consolidation of ownership where overall land management would be improved, including blocking of land patterns such as private and state lands.

Disposal of these land parcels is consistent with objectives identified in the RMP which calls for the disposal of isolated parcels that have no important wildlife habitat values; are not within sensitive watershed or riparian areas; are in areas where BLM initiated range management opportunities; are limited because of size, isolation, and site potential; are lands where BLM initiated forest management opportunities are limited because of parcel size, stand size, access difficulties, or adverse sites; or have no resource values of major significance.

The proposed action would replace 127 parcels which are scattered throughout Routt County with one large, contiguous and easily accessible parcel. This would result in lowered management costs and improved management efficiency. BLM parcels isolated by private land are more difficult to access because they require additional time for BLM staff visit and to gain access permission, often from multiple land owners. By consolidating BLM land ownership on the Emerald Mountain parcel, BLM staff can improve efficiency by devoting this additional time to monitoring and management. In addition, administrative costs associated with maintaining landline boundaries and corners, special-uses, title claims, rights-of-way grants and easements, grazing allotments, and intermingled ownership livestock pastures would be reduced under the proposed action. By reducing management such as land health assessments of the 127 scattered parcels to one parcel the BLM staff would reduce workload and travel expenses in management of public lands within Routt County.

3.2 Increase Public Recreational Opportunities

Public acquisition of the Emerald Mountain parcel has the potential to enhance and support recreational opportunities in Routt County communities, which have recreation and tourism based economies.

3.3 Acquire and Protect Wildlife Habitat

Acquisition of the offered non-federal parcel would also protect wildlife resources of the property and prevent potential development that would conflict with natural resource management goals.

3.4 No Action

No Action is to not consummate the exchange and not amend the RMP.

3.5 Alternatives Considered but Eliminated

Through the public scoping and internal scoping process, no other alternatives were considered.

4.0 Public Notification

BLM informally notified the public of the proposed land exchange on September 17, 2003 with the posting of a website (www.co.blm.gov/lsra/emerald_mtn/em.htm) describing the proposal and providing detailed information and documents, including the approved feasibility study and agreement to initiate the exchange. Formal public notification of the proposed exchange occurred through the publication of legal notices in local newspapers. These public notices invited interested parties to submit comments to the Little Snake Field Office for a period of 45 days. Notification of the proposed exchange was sent to interested parties, including state and local agencies and elected officials. The Notice of Exchange Proposal was published in the following newspapers on the dates indicated:

The Hayden Valley Press	February 9, 16, 23 and March 2, 2005
Craig Daily Press	February 11, 18, 25 and March 4, 2005
Moffat County Morning News	February 13, 20, 27, and March 6, 2005
The Steamboat Pilot	February 13, 20, 27 and March 6, 2005

In addition, BLM held three public open houses to gather public input. These meetings were held as follows:

March 7, 2005 at Olympian Hall, Steamboat Springs, 3:00-8:00 p.m.
March 8, 2005 at Town Hall, Oak Creek, 3:00-8:00 p.m.
March 9, 2005 at Town Hall, Hayden, 3:00-8:00 p.m.

Seventy-eight members of the public attended the Steamboat Springs meeting, twenty-six attended the Oak Creek meeting, and twenty-four attended the Hayden meeting. BLM received 139 written scoping responses from individuals, non-governmental entities and other public agencies during the comment period.

5.0 Public Issues & Management Concerns

During the public scoping period, BLM received 139 written comments. Of these, 30 indicated opposition to the land exchange, 93 supported the exchange, and 16 did not indicate whether they were for or against the land exchange, but identified issues relating to the future management of the Emerald Mountain parcel.

Those respondents expressing opposition to the trade mentioned concerns about specific federal parcels being included in the trade, the federal appraisal process, and the process of identifying participants for the trade.

Respondents expressed a wide variety of opinions regarding BLM's future management of the Emerald Mountain parcel if the trade is completed. In many cases, a respondent raised more than one management consideration in a single letter. The following list summarizes all of the comments related to management considerations received by BLM during the scoping period.

- Motor vehicle use
  - Prohibit motorized vehicles on Emerald Mountain
  - Designate roads/trails or provide for limited motorized use

- Non-motorized uses
  - Cross-country skiing
  - Hiking
  - Mountain biking
  - Horseback riding
  - Snowshoeing
  - Biathlon/Nordic skiing facility

- Shooting range
  - Gun shooting range
  - Biathlon shooting range
  - Archery range
  - Prohibit shooting ranges

- Hunting
  - Allow hunting
  - Allow limited or carefully controlled hunting
  - Limit or prohibit outfitting
  - Prohibit hunting

- Camping
  - Prohibit camping and campfires
  - Allow limited camping

- Grazing
  - Continue to allow grazing of Emerald Mountain
  - Limit grazing of Emerald Mountain

- Mining and energy development

- Prohibit mining and energy development

- Trailhead and facility development
  - Develop trailheads, outhouses, picnic areas
  - Limit trailhead development
  - Leave westernmost portion of Emerald Mountain in primitive condition
  - Maintain existing visual quality
  - Provide on-site environmental education

- Wildlife and habitat concerns

- Concerns of neighboring landowners
  - Parking
  - Trespass onto private lands
  - Acquisition of portions of Emerald Mountain

- Law enforcement and safety concerns

- Implement Emerald Mountain Partnership Management Plan

6.0 Critical Resources & Consequences of the Exchange

This section describes relevant aspects of the affected environment of the selected federal parcels and the offered non-federal parcel, identifies the environmental consequences of the proposed land exchange, and the No Action Alternative for all Critical Resources. Critical Resources not relevant to the exchange include Air Quality, Areas of Critical Environmental Concern (ACECS), Prime and Unique Farmland, Wild and Scenic Rivers, Wilderness Areas, and Wilderness Study Areas. These resources are not discussed in this document.

6.1 Cultural Resources

6.1.1 Affected Environment

Cultural Resources in this region of Colorado range from late Paleo-Indian to Historic. For a general understanding of the Cultural Resources in this area of Colorado, see *An Overview of Prehistoric Cultural Resources, Little Snake Resource Area, Northwestern Colorado,* Bureau of Land Management Colorado, Cultural Resources Series, Number 20, and *An Isolated Empire, A History of Northwestern Colorado,* Bureau of Land Management Colorado, Cultural Resource Series, Number 2.

6.1.1.1 Selected Federal Parcels

Class III Cultural Resource Surveys were conducted on the selected federal parcels, (Reust, Thomas and James A. Lowe, 2004; McClelland, Bruce R. and James A. Lowe, 2005). The recorded cultural resources include seven prehistoric lithic scatters, 15 prehistoric isolated finds, seven historic cabins, one historic isolated find, one historic ditch, one historic aspen art site, a historic trash dump, a site with one small cairn of unknown age, and one site with a single stone circle. These resources are evaluated as not eligible for nomination to the National Register of Historic Places Prehistoric Cultural Resources. Analysis of the stone artifact material types suggest exploitation of local secondary deposits of quartzite cobbles and use of Kremmling chert from Middle Park to the east and southeast of the proposed land exchange. No further work is recommended.

6.1.1.2 Offered Non-Federal Parcel

The Emerald Mountain non-federal parcel has not been surveyed for Cultural Resources.

6.1.2 Environmental Consequences

The change in land ownership would not impact Cultural Resources. There are no sites eligible to the National Register of Historic Places Prehistoric Cultural Resources on the selected federal parcels, and any action that would result in ground disturbing activities on the offered non-federal parcel would take Cultural Resources into account in accordance with various laws, BLM regulations and BLM Colorado policies.

Copies of the Cultural Resources Survey are on file with the Bureau of Land Management, Little Snake Field Office, Colorado State Historic Preservation Office, and Western Land Group.

6.1.3 No Action Alternative

Under the No Action Alternative, the BLM would maintain responsibility for any Cultural Resources on the selected federal parcels and the SLB would maintain responsibility for any potential Cultural Resources on the offered non-federal parcel.

6.2 Hydrology & Water Quality – Surface & Ground

6.2.1 Affected Environment

The area of the selected federal parcels and the offered non-federal parcel is characterized by the north-south trending Park Range on the east, the Elkhead Mountains north of Hayden, and the Flat Top Mountains to the southwest (Figure 1). The low elevation Williams Fork Mountains are located south of the Yampa River and north of the Flat Top Mountains. All of the land parcels are within the drainage basin of the Yampa River. The Yampa River begins near the Town of Yampa, flows north to Steamboat Springs, turns and flows west to Craig, and then continues west to join the Green River in Utah. The area north of the Elkhead Mountains drains to the Little Snake River which joins the Yampa River just east of Dinosaur National Monument. Major tributaries to the Little Snake River include Slater Creek, Willow Creek and the South Fork of the Little Snake River.

Major tributaries flowing south from the Elkhead Mountains to the Yampa River include Fortification Creek, Elkhead Creek and the Elk River. Major tributaries to the Yampa River flowing north from the Williams Fork Mountains include Dry Creek, Grassy Creek, Trout Creek, and Oak Creek. The East Fork of the Williams Fork River drains the southwest portion of Routt County between the Williams Fork Mountains to the north and the Flat Top Mountains to the south.

6.2.1.1 Selected Federal Parcels

Surface Water Sources and Quality. The selected federal parcels are scattered throughout Routt County. Table 6.2-1 identifies the perennial streams and rivers on the exchange parcels, the length of the stream/river on the parcel, and the general width of the stream/river. Of the 127 selected federal parcels, 27 parcels have segments of perennial streams and rivers, and 18 parcels have lakes and ponds. The water courses are variable in size. For example, the 30 foot wide Elkhead Creek flows through 5,618 linear feet of Parcel 24, and the three foot wide East Fork of Smith Creek flows through 281 linear feet of Parcel 22a.

Ponded water occurs in 15 man-made stock ponds in upland habitats and along streams, in 15 beaver ponds, and in seven other natural or man-made ponds. The surface area of these ponds ranges from the 76,592 square foot (ft^2) Butter Lake on Parcel 3 to the 300 ft^2 stock pond on Parcel 21.

Section 303(d) of the Clean Water Act requires that states submit to the U.S. Environmental Protection Agency a list of those waters for which technology-based effluent limitation and other required controls are not stringent enough to implement water quality standards. The Colorado Department of Public Health and Environment (2004) lists portions of two streams in the project area as impaired. They include a segment of Dry Creek, a tributary to the Yampa

River south of Hayden, and a segment of Middle Creek, a tributary to the Yampa River north of Oak Creek. The segment of Dry Creek is impaired due to selenium, and the segment of Middle Creek is impaired due to a high pH. Neither of these stream segments is located on any of the exchange parcels.

Ground Water Sources and Quality. Ground water is present in the alluvial aquifers along streams, and deeper in various geologic strata. As indicated by Table 6.2-1, 27 selected federal parcels have streams and rivers. The volume of water present in the alluvium along these stream courses is related to the thickness of alluvial deposits, the width of the floodplain, the hydrology of the stream, the time of the year, and climatic conditions.

Information on the aquifers in the geologic strata is summarized from the Ground Water Atlas of the United States: Arizona, Colorado, New Mexico, & Utah (1995). This report, as prepared by the U.S. Geologic Survey Office of Surface Water, describes the various aquifers of the Colorado Plateau which extend to the west side of the Park Range in Routt County (Figure 2). The deeper Dakota-Glen Canyon Aquifer underlies all of the selected federal parcels except for Parcel 78, located east of Steamboat Springs. The Mesa Verde Aquifer underlies those selected federal parcels generally west of Milner and north of the Williams Fork Mountains.

Water-yielding rocks ranging from the late Cretaceous to the Triassic underlie most of the Colorado Plateau area. These rocks contain a series of aquifers referred to as the Dakota-Glen Canyon Aquifer System. The aquifers of this system include, from youngest to oldest, the Dakota, Morrison, Entrada, and Glen Canyon Aquifers. The water-bearing materials include sandstone, conglomerates, and conglomerate sandstone with interbedded siltstone. The great depth to the aquifers, or poor water quality, make these aquifers unsuitable for development. However, in areas where the aquifers are at the land surface, they may be an important source of water. The project area is not a major recharge or discharge area for these aquifers. Fractures form the principle pathways for water movement in the well-consolidated materials. With regard to water quality, the dissolved-solids concentration of water in the Glen Canyon Aquifer in the project area ranges from 1,000-3,000 milligrams per liter.

The Mesa Verde Aquifer comprises water-yielding units in the Upper Cretaceous Mesa Verde Group, its equivalents, and some adjacent Tertiary and Upper Cretaceous formations (Figure 2). The Mesa Verde Aquifer is at or near land surface in extensive areas of the Colorado Plateau. The aquifer is of a regional importance in some areas of the Colorado Plateau, but not in Routt County. The rocks that compose the Mesa Verde Aquifer are conglomerates, sandstone, siltstone, mudstone, claystone, carbonaceous shale, limestone, and coal.

Water generally recharges the Mesa Verde Aquifer in upland areas that receive more precipitation than lower altitude areas. Ground water discharges from the aquifer directly to streams, springs and seeps by upward movement through confining layers and into overlying aquifers, or by withdrawal from wells. The natural discharge areas generally occur along streams and rivers.

The quality of the water in the Mesa Verde Aquifer is extremely variable. The dissolved-solids concentration of water from the aquifer is 1,000-3,000 milligrams per liter for Routt County.

6.2.1.2 Offered Non-Federal Parcel

Surface Water Sources and Quality. The Emerald Mountain parcel is bordered by 18,558 linear feet of the 5-10 foot wide Cow Creek, and has six stock watering ponds. In addition, there is ponded water in old beaver ponds along an ephemeral drainage and around a spring and seep. With regard to water quality, Cow Creek is not listed as impaired by the Colorado Department of Public Health & Environment (2004), Section303(d) of the Clean Water Act.

Ground Water Sources and Quality. The offered non-federal parcel is underlain by the Dakota-Glen Canyon and the Mesa Verde Aquifers. Section 6.2.1.1 describes these aquifers and their water quality.

6.2.2 Environmental Consequences

Surface Water Sources and Quality. Under the Proposed Action, 27 parcels with segments of streams and rivers, and 18 parcels with man-made and natural ponds would be transferred to private ownership, and the offered non-federal Emerald Mountain parcel with a long segment of Cow Creek, ephemeral tributaries to Cow Creek, and six ponds would be transferred to federal ownership.

In general, if the current land uses on the selected federal parcels are the same or similar to those implemented after the exchange, overall surface water quality would not be affected, especially due to the lack of large land blocks being exchanged and the small acreage of the watershed affected. Currently there are no land parcels identified as having accelerated erosion or other land uses that impact water quality. Potential changes in land use may result in changes in water quality, however, there are no reasonably certain development plans on any of the parcels to be transferred to private ownership. Please note, there are federal, state and county regulations that protect water quality on both the selected federal parcels and the offered non-federal parcel.

The BLM has developed a RMP with four alternative management scenarios for Emerald Mountain (See Section 9.0). Implementation of the RMP may increase, decrease, or maintain existing levels of grazing use in order to improve or maintain the health of vegetation, thus reducing the risk of soil erosion. A more detailed discussion of water quality impacts of the RMP alternatives is included in Sections 9.4.1.3 and 9.5.4 of the Resource Management Plan.

Ground Water Sources and Quality. Under the Proposed Action, 127 selected federal parcels underlain by two regional aquifers would be transferred to private ownership, and the offered non-federal Emerald Mountain parcel, underlain by the same two aquifers, would be transferred to federal ownership. However, the Dakota-Glen Canyon Aquifer is likely not used as a water source on any of the selected federal parcels or the non-federal parcel because it is too deep, and the Mesa Verde Aquifer is not of a regional importance in Routt County. Therefore, the change in ownership of parcels would have little or no impact on the ground water resources.

6.2.3 No Action Alternative

Under the No Action Alternative, the federal government would retain ownership of the selected federal parcels and their surface and ground water features, on which the federal government has filed water rights. The non-federal Emerald Mountain parcel would continue to be owned by the SLB, at least for the foreseeable future. Water quality would likely remain the same because the land uses would likely be the same.

6.3 Floodplains

6.3.1 Affected Environment

6.3.1.1 Selected Federal Parcels

Many of the selected federal parcels have segments of streams and rivers which have small floodplains. Table 6.2-1 identifies the perennial streams and rivers on the exchange parcels, the length of the stream/river on the parcel, the general width of the stream/river, and the estimated width of the floodplain. Many of the parcels are bisected by small streams which have very little to no floodplain development. The most extensive floodplain development occurs along the Little Snake River on Parcel 2 and along the East Fork of the Williams Fork River on Parcel 112. The floodplain along these streams is up to 1,000 feet wide. Moderately sized floodplains, 200-900 feet wide, occur along Elkhead Creek on Parcels 20, 24, 26, 27, 28,

and 54, along the North and South Forks of Chimney Creek on Parcel 66, along Trout Creek on Parcels 89 and 104A, and along Phillips Creek on Parcel 130.

6.3.1.2 Offered Non-Federal Parcel

The offered non-federal Emerald Mountain parcel is bordered by an 18,558 foot long segment of Cow Creek, a north-flowing tributary to the Yampa River. Cow Creek is about 5-10 feet wide and has developed a variable floodplain 20-100 feet wide.

6.3.2 Environmental Consequence

Under the Proposed Action, the federal government would acquire the Emerald Mountain parcel which contains segments of Cow Creek with a floodplain up to 100 feet wide in some places. Under the Proposed Action, 27 parcels with segments of streams and rivers with floodplain development would be transferred to private ownership. Flooding should not be a problem on the non-federal parcel to be acquired by the BLM, because no structures would be built within the floodplain of Cow Creek. Flooding could present minor seasonal problems if roads or structures are built within the floodplains on selected federal parcels once they are exchanged.

6.3.3 No Action Alternative

Under this alternative, ownership and management of floodplains on selected federal and the offered non-federal parcels would remain unchanged. Flooding along water courses on selected federal parcels would not affect structures, because none are present. Furthermore, there are no structures near potential flooded landscapes on the offered non-federal parcel.

6.4 Invasive Non-Native Species

6.4.1 Affected Environment

6.4.1.1 Selected Federal Parcels

Three of the Selected Federal Parcels contain large, mappable stands of state-listed noxious weeds: Parcels 63, 83A, and 110. In a disturbed area near the southeastern corner of Parcel 63, there is a large stand of Canada thistle *(Cirsium arvense)* and houndstongue *(Cynoglossum officinale*) measuring approximately 1,200 square feet. On Parcel 83A, a swale located just north of the parcel's center contains a large, dense stand of Canada thistle measuring approximately 20,000 square feet. A large stand of Canada thistle was also mapped on Parcel 110, along an ephemeral drainage near the northeastern corner of the parcel. This stand is approximately 800 square feet in size.

Although large, dense stands were mapped on only three parcels, state-listed noxious weeds are common throughout Routt County and occur on nearly every parcel surveyed. In particular, Canada thistle is common on 58 of the 129 selected federal parcels, and houndstongue is common on 56 of the parcels. In general, these weeds are most abundant in moist soils at the margins of wetlands and along ephemeral drainage swales where native plant cover has been reduced by grazing. In addition, Canada thistle grows densely on many of the beaver dams present in the study area. Tarweed *(Madia glomerata)*, also a state-listed noxious weed, is common on at least 13 parcels impacted by grazing and other disturbances. Other noxious weeds common on one or more parcels include cheatgrass *(Bromus tectorum)*, bull thistle *(Cirsium vulgare)*, shepherd's purse *(Capsella bursa-pastoris)*, white top *(Cardaria draba)*, and yellow toadflax *(Linaria vulgaris).*

Please note, Routt County has developed its own noxious weed list, which is a subset of the State of Colorado list and includes only nine species: leafy spurge *(Euphorbia esula (Tithymalus esula))*, diffuse knapweed *(Acosta diffusa (Centaurea))*, spotted knapweed *(Acosta maculosa (Centaurea))*, Russian knapweed *(Acroptilon repens)*, white top, Dalmatian toadflax *(Linaria genistifolia)*, meadow knapweed *(Centaurea pratensis)*, and houndstongue. Thus,

Canada thistle, the most prolific noxious weed on the survey parcels, is not specifically listed as a species of concern in Routt County.

6.4.1.2 Offered Non-Federal Parcel

No large, dense stands of state-listed noxious weeds were mapped on the Emerald Mountain parcel. However, long-term grazing has resulted in an abundance of weeds in many areas. In particular, the noxious weeds Canada thistle, houndstongue, and tarweed are common in areas with heavy livestock use. Specifically, these three species are present along most of the ephemeral and perennial drainages, in moist soils at the margins of wetlands and stock ponds, in agricultural grasslands, and in sagebrush shrublands.

6.4.2 Environmental Consequences

The Proposed Action would result in the loss of federal management responsibility for weed infestations on Parcels 63, 83A, and 110. The participants purchasing these parcels would be responsible for weed control on the three parcels. The BLM would acquire the Emerald Mountain Parcel, where noxious weeds are common in areas of heavy livestock use, but do not form any large mappable stands.

6.4.3 No Action Alternative

Under the No Action Alternative, the BLM would have continued responsibility for management of weed populations on Parcels 63, 83A, and 110, and the SLB would continue to be responsible for weed populations on the Emerald Mountain parcel.

6.5 Migratory Birds

In 1918 the United States and Canada entered into the Migratory Bird Treaty Act (MBTA [16 U.S.C. 701-711]). The MBTA established a federal prohibition, unless permitted by regulations, to “pursue, hunt, take … any part, nest, or egg of such bird.” Section 703 of the MBTA provides protection to migratory birds from all parties and does not provide an exception for individuals, states officers, or federal agencies.

Executive Order 13186 (Clinton, 2001) outlines the responsibilities of federal agencies to protect migratory birds. This Order directs departments and agencies to take certain actions to further implement the intention of the MBTA. These actions include, but are not limited to, the following:

- Support the conservation intent of the Migratory Bird Conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.

- Restore and enhance the habitat of migratory birds, as practicable.

- Prevent or abate the pollution or detrimental environmental impacts caused by highways (and roads) on nesting birds.

- Ensure that environmental analyses of federal actions required by NEPA or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern.

Based on the authority conferred to the USFWS by the MBTA, the USFWS may determine when taking of a migratory bird can occur. This determination may be based upon breeding habits, times of migration, or other biological factors. Therefore, in order to reduce the potential take of a migratory bird, the USFWS requests that agencies avoid activities that may result in the taking of migratory birds from the time that the first egg is laid until the last young is fledged.

The distribution of migratory bird species and their likelihood of occurrence on the land exchange parcels were evaluated based on information contained in the Colorado Breeding Bird Atlas (Kingery, 1995) and on-line at the CDOW Natural Diversity Information Source website (http://ndis.nrel.colostate.edu/). In addition, the habitats present on each parcel, as identified by site reconnaissance and the vegetation inventory, were also used in the analysis. Table 6.5-1 presents a list of birds potentially present in the project area of the land exchange parcels.

The U.S. Fish & Wildlife Service (2002) has created a list of Birds of Conservation Concern that identifies migratory and non-migratory bird species, beyond those that are already listed as Federally threatened or endangered, that represent the highest conservation priorities. For Bird Concentration Region 16 (Southern Rockies/Colorado Plateau), which includes the land exchange parcels, 29 species are listed: northern harrier *(Circus cyaneus)*, Swainson's hawk *(Buteo swainsoni)*, ferruginous hawk *(Buteo regalis)*, golden eagle *(Aquila chryseatos)*, peregrine falcon *(Falco peregrinus)*, prairie falcon *(Falco mexicanus)*, Gunnison sage grouse *(Centrocercus minimus)*, snowy plover *(Charadrius alexandrinus)*, mountain plover *(Charadrius montanus)*, solitary sandpiper *(Tringa solitaria)*, marbled godwit *(Limosa fedoa)*, Wilson's phalarope *(Phalaropus tricolor)*, yellow-billed cuckoo *(Coccyzus americanus)*, flammulated owl *(Otus flammeolus)*, burrowing owl *(Athene cunicularia)*, short-eared owl *(Asio flammeus)*, black swift *(Cypseloides niger)*, Lewis's woodpecker *(Melanerpes lewis)*, Williamson's sapsucker *(Sphyrapicus thyroideus)*, gray vireo *(Vireo vicinior)*, pinyon jay *(Gymnorhinus cyanocephalus)*, Bendire's thrasher *(Toxostoma bendirei)*, crissal thrasher *(Toxostoma bendirei)*, Sprague's pipit *(Anthus spragueii)*, Virginia's warbler *(Vermivora virginiae)*, black-throated gray warbler *(Dendroica nigrescens)*, Grace's warbler *(Dendroica graciae)*, sage sparrow *(Amphispiza belli)*, and chestnut-collared longspur *(Calcarius ornatus)*.

Of the 29 Birds of Conservation Concern, 15 have potential to occur on the land exchange parcels, and are discussed below. These species are the northern harrier, Swainson's hawk, golden eagle, peregrine falcon, prairie falcon, solitary sandpiper, marbled godwit, Wilson's phalarope, burrowing owl, short-eared owl, Lewis's woodpecker, Williamson's sapsucker, Virginia's warbler, black-throated gray warbler, and sage sparrow. Four species, the ferruginous hawk, Gunnison sage-grouse, mountain plover, and yellow-billed cuckoo are addressed in Section 6.6 (Federally Listed & Candidate Species) and Section 6.7 (BLM Sensitive Species), and are not discussed further in this section.

Ten species, the snowy plover, flammulated owl, black swift, gray vireo, pinyon jay, Bendire's thrasher, crissal thrasher, Sprague's pipit, Grace's warbler, and chestnut-collared longspur, either have no documentation of occurrence, or suitable habitat does not exist in Routt County and the affected portion of Moffat County (Kingery, 1995). These species would not be considered further in this document.

6.5.1 Affected Environment

6.5.1.1 Selected Federal Parcels

All selected federal parcels were surveyed by ecologists from Western Ecological Resource and Habitat Concepts in the spring, summer and fall of 2003 and in the fall of 2004. Wildlife species present were noted and signs of wildlife use recorded, and any unique habitat features were described. In addition, the vegetation communities were identified and evaluated to determine which species may be supported by these habitats. In addition, the parcels were evaluated in the context of the surrounding landscape to determine if they may be important components of a larger home range territory.

The selected federal lands are characterized by numerous vegetation communities including grasslands, forblands, shrublands, woodlands, forests, and riparian and wetland habitats, as described below in Section 7.8. The Selected Federal Parcels range in elevation from a low of

6,286 feet at Parcel 91 to a high of 9,360 feet at Parcel 131. The parcels lack any unique land features that might provide special habitat such as caves, waterfalls or large cliffs.

The 127 selected federal land parcels vary in size from 1.93 acres to 1,070.78 acres. Table 6.5-2 is a size class distribution of the selected federal parcels. Many of the selected federal parcels, by themselves, are not large enough to support most large species, which characteristically have larger home ranges. However, the habitat of the selected federal parcels is generally similar to surrounding habitats, and the development density in the vicinity of the parcels is very low. Therefore, the selected federal parcels could represent a portion of the home ranges of larger species.

No selected federal parcel, in and of itself, provides suitable nesting habitat for Swainson's hawk, golden eagle, peregrine falcon, prairie falcon, solitary sandpiper, marbled godwit, Wilson's phalarope, burrowing owl, and short-eared owl based on habitat preferences identified for each species (Kingery 1995). The selected federal parcels likely provide hunting and foraging opportunities for these species. No selected federal parcel provides any unique feature that would attract these species. None of these species were observed during field surveys of the parcels. However, the field surveys were brief and occurred only once or twice. Thus, these species are assumed to be present in suitable habitats in the absence of further long-term surveys.

Some parcels have suitable nesting conditions for northern harrier, Lewis's woodpecker, Williamson's sapsucker, Virginia's warbler, black-throated gray warbler, and sage sparrow. None of these species were observed during field reviews of the parcels. However, the reviews were brief and one time occurrences. Thus, these species are assumed to be present in suitable habitats in the absence of further long-term surveys.

6.5.1.2 Offered Non-Federal Parcel

The offered non-federal Emerald Mountain parcel was surveyed by ecologists from Western Ecological Resource and Habitat Concepts in the spring, summer and fall of 2003 and in the fall of 2004.

The Emerald Mountain parcel does not provide suitable nesting habitat for the northern harrier, golden eagle, peregrine falcon, prairie falcon, solitary sandpiper, marbled godwit, Wilson's phalarope, burrowing owl, or short-eared owl. The parcel could potentially provide hunting and foraging opportunities for northern harrier, golden eagle, peregrine falcon, prairie falcon, and short-eared owl. The Emerald Mountain Parcel does not have any unique feature that would attract these species.

The Emerald Mountain Parcel provides suitable nesting habitat for Lewis's woodpecker, Williamson's sapsucker, Virginia's warbler, black-throated gray warbler, and sage sparrow. These species were not observed during field reviews of the parcels. However, the reviews were brief and occurred only once or twice. Thus, these species are assumed to be present in suitable habitats in the absence of further long-term surveys.

6.5.2 Environmental Consequences

The direct effect of the Proposed Action is the change in land parcel ownership. Specifically, 127 parcels of land owned by the federal government and managed by the BLM would be transferred to private ownership, and the offered non-federal Emerald Mountain parcel of 4,404 acres owned by the SLB would be transferred to federal ownership and managed by the BLM.

Indirect effects of the proposed land exchange are those secondary or subsequent actions that are reasonably certain to occur as a consequence of the land exchange. General actions of concern to wildlife species include development or utilization of a parcel that results in conversion of habitat into non-habitat (type conversion) or unsuitable habitat.

Six selected federal parcels (12, 13, 15, 78, 102, and 114) could potentially have some level of development in the future. These parcels are either located adjacent to an existing subdivision, are separated from an existing subdivision by lands owned by the exchange participant, or are located in close proximity to state parks or the town of Steamboat Springs. Four additional parcels meet the above criteria (11, 50, 90, and 105) but are unlikely to be developed because the new landowner's stated intent is to place the parcels in a voluntary conservation easement or the parcels would have voluntary deed restrictions that would limit future development. Topographic and other development constraints are present for many of the land exchange parcels that reduce their likelihood of development. Regardless of their location, development of any of these parcels is not reasonably certain.

It is reasonable to assume that the remaining 121 selected federal parcels to be transferred to private ownership would remain in a ranching land use consistent with existing land uses, generally livestock grazing. Specifically, 94 of the remaining parcels would be transferred to one of the grazing lessees, and four would be transferred to the State Land Board. It is reasonably certain that the land use would not change because the surrounding lands are currently available for development and no development is occurring. Thus, private acquisition of the federal parcels is not likely to trigger development.

In summary, there are no anticipated changes to habitat suitability or availability of the selected federal parcels from existing conditions for northern harrier, Swainson's hawk, golden eagle, peregrine falcon, prairie falcon, solitary sandpiper, marbled godwit, Wilson's phalarope, burrowing owl, short-eared owl, Lewis's woodpecker, Williamson's sapsucker, Virginia's warbler, black-throated gray warbler, and sage sparrow. Similarly, there are no anticipated changes to habitat suitability or availability of the offered non-federal Emerald Mountain parcel from existing conditions for these species. However, the Emerald Mountain parcel, under federal jurisdiction, could provide habitat management for these species according to applicable regulations in a consolidated block of property.

There are no anticipated cumulative effects to any of the birds of concern due to the Proposed Action, a change in land ownership. The land use on the selected federal land parcels going to private ownership would likely remain the same. For most of these parcels, the existing and post-exchange land use would likely be livestock grazing. There is the remote potential that some of the parcels could be developed. However, that is not reasonably certain to occur and any such development would be subject to county and federal regulations in some circumstances.

The change in ownership of the offered non-federal Emerald Mountain parcel to federal ownership would not have any cumulative effect to species considered, because future actions on federal lands are subject to provisions of the National Environmental Policy Act and Endangered Species Act.

There are no future state, tribal, local, or private actions which are reasonably certain to occur in the exchange area that would result in cumulative effects to the species considered.

6.5.3 No Action Alternative

Under the No Action Alternative, the land exchange would not occur. There would be no change to the relative habitat suitability and the potential occurrences for the Birds of Concern as described above in Section 6.5.1. The selected federal parcels which are surrounded by private lands and those with no access would continue to be difficult for the BLM to manage. The Emerald Mountain Parcel would continue to be managed by the SLB for their goals or could be sold off to other entities, as is occurring elsewhere.

6.6 Federally Listed & Candidate Species

Federally listed and candidate species were addressed in a Biological Assessment (BA) prepared in accordance with Section 7 of Endangered Species Act of 1973 (as amended) and the Interagency Cooperation Regulation (50CFR402) to address the effects of the land exchange on federally threatened, endangered and candidate species. This section summarizes results of the BA as prepared by Western Ecological Resource (2005).

Species considered include one amphibian, three birds, four fish, two mammals, and one plant for Routt and Moffat counties (Table 6.6-1).

The four endangered fish, the Mexican spotted owl *(Strix occidentalis lucida),* and the black-footed ferret *(Mustela nigripes)* were excluded from analysis. The four endangered fish were not evaluated in the BA because there is no habitat on any of the selected federal parcels or the offered non-federal parcel, and because no water depletions would result from the Proposed Action. The USFWS was concerned only about the potential presence of the Mexican spotted owl and black-footed ferret in Moffat County, and there was no habitat on the 201 acres of Parcels 16 and 24 located in Moffat County.

All selected federal parcels and the offered non-federal Emerald Mountain parcel were surveyed by ecologists from Western Ecological Resource and Habitat Concepts in the spring, summer and fall of 2003 and in the fall of 2004. The vegetation types of each parcel were characterized by species dominance and structural diversity, the range condition was assessed, and any weed populations were described. Aquatic, riparian and wetland communities were specifically noted and described. In addition, wildlife species present were noted, signs of wildlife use were recorded, and any unique habitat features were described. Finally, the suitability of the parcel's habitats to support federally listed threatened, endangered and candidate species was assessed. No federally listed or candidate species were observed on any of the parcels during the field surveys.

6.6.1 Affected Environment

6.6.1.1 Selected Federal Parcels

Boreal Toad: There are six known active breeding sites for the boreal toad in Routt County. All six sites are in the Routt National Forest and are being monitored by the U.S. Forest Service and the Boreal Toad Recovery Team (CDOW 2001, 2002, 2003a, 2003b).

Selected federal parcels over 7,000 feet in elevation which have aquatic habitats include two with permanent stock ponds (80, 94), four with stable beaver ponds (22a, 107,108 and 116), and eight with perennial streams (40a, 85, 98, 101, 104a, 109, 112, and 118). One aquatic habitat, Parcel 107, has a population of northern leopard frog *(Rana pipiens)*. No boreal toads were observed in any of these aquatic habitats.

Yellow-Billed Cuckoo: There are no selected federal parcels that have suitable habitat for yellow-billed cuckoo.

Bald Eagle: There is no critical habitat designated for the bald eagle in the Little Snake Field Office area of the Bureau of Land Management, nor on the selected federal parcels (USDI-FWS, 1983).

Potential bald eagle nesting and winter roosting habitat in the Little Snake Field Office area is primarily associated with mature forest or mature forested riparian habitats of the Yampa River basin. Known nesting sites occur west of Steamboat Springs in the vicinity of Saddle Mountain, Mount Harris, and the Yampa River State Wildlife Area.

Bald eagle winter concentration areas are similar to the nesting areas described above. The Routt County portion of the Little Snake Field Office has mapped bald eagle concentration areas which are displayed on NDIS maps, including the West Fork of The Elk River at the Yampa River, Yampa River downstream from Lake Catamount, Yampa River at Stagecoach Reservoir dam, Yampa River west of Steamboat Springs, and the Yampa River near the Carpenter Ranch (NDIS, 2005).

None of the Selected Federal Parcels occur in mapped bald eagle winter concentration areas. Elk River Parcels 50 and 51 and the Little Snake River near Parcel 2 have limited potential for individual bald eagle roosting. Roosting potential is judged 'limited' due to the small patch-size and small size of the cottonwood habitats of the Little Snake parcels, and northerly aspect and denseness of the conifer habitats of Parcels 50 and 51. All three parcels are near relatively busy county roads, which further reduce their suitability.

Bald eagle concentrated foraging habitats are displayed on NDIS maps coinciding with elk winter concentration areas because they are potential carrion sites (NDIS 2005). Concentrated bald eagle foraging areas in the Routt County portion of the Little Snake Field Office area include elk winter range between Yampa and Oak Creek, west of Rabbit Ears Pass (west), Foidel Creek (Twenty-mile Mine), south aspect of the Williams Fork Mountains, north and east of Hayden, and between Hayden and Craig (NDIS 2005).

No parcels associated with the Emerald Mountain Land Exchange occur in mapped concentrated bald eagle winter foraging areas. However, elk and mule deer mortality can occur anywhere. If an elk or mule deer mortality resulted in a carcass on a Selected Federal Parcel in winter, bald eagles could forage at the carcass site (personal observation west of Yampa, CO – Kit Buell 2004).

Canada Lynx: The historical occurrence of Canada lynx in Routt County prior to 1998 was largely unknown. Sightings were few and historical records never considered lynx to be 'plentiful'. One record was recently obtained regarding a lynx trapped 10 miles east of Emerald Mountain in 1960 by a Routt County resident. The record is a receipt from the Rocky Mountain Taxidermy Studio, Golden, Colorado, for one "Lynx Cat Rug".

The bulk of potential Canada lynx habitat in Routt County occurs primarily in the Routt National Forest, generally above 8,000 feet in elevation. Historically, the primary activities that adversely affected Canada lynx (nationally, in Colorado, and likely in Routt County) were trapping and hunting. Since the turn-of-the-century until about the 1930's, humans had a focused program to eliminate many undesirable carnivores and rodents. Past and current furbearer harvest programs occurred for the remaining moderate-to-small furbearers, including lynx.

These past actions coincided with a crash of lynx primary prey populations, snowshoe hare, due to predation by lynx (and about 20 other predators), and by changed forest conditions. Near the turn-of-the-century, much of Routt County's lodgepole pine and aspen forests regenerated following fire which resulted in an increase in hare foraging habitat. The suitable habitat lasted until the 1920's, when lodgepole pine and aspen forests matured, and hare populations declined. In addition, during 1940's and 1950's forest management resulting in even-aged stands in the spruce-subalpine fir forest reduced habitat suitability for hares in many locations.

By the mid-1970's the lynx population in Colorado was extirpated or reduced to a few animals. The lynx has been listed as a state endangered species since 1976 and was federally listed as a threatened species in 2000. In 1996, trapping in Colorado was eliminated through Amendment 14.

The Colorado Division of Wildlife released 195 individual lynx from Canada during 1999, 2000, 2003, 2004, and 2005 to augment the low natural population in Colorado. There is no designated Critical Habitat for Canada lynx on either the Little Snake Field Office area, or the adjacent Routt National Forest, or in the State of Colorado. Shenk (2001) describes transplanted lynx activity across Colorado, with few individuals located north of Interstate Highway 70. Of the 195 lynx released between 1999 and 2005, there are 61 known mortalities (CDOW 2002b). Causes of death include starvation, road-kill, shooting, plague, human-caused, trauma, predation, and several unknown causes. Several individual female lynx thought to have experienced breeding were monitored by the CDOW and reproduction has been confirmed in 2003, 2004 and 2005.

Canada lynx habitats are modeled on the Little Snake Field Office area in Routt County under the specific assumptions common to National Forests in Colorado. The Little Snake Field Office modeled habitats were mapped utilizing the best information at the time, which was State of Colorado GAP vegetation information. Mapping efforts were closely coordinated with the Routt National Forest modeled habitat definitions and Lynx Analysis Units (LAU)(USDA-FS 2004). The Little Snake Field Office area LAU mapping is based upon regional data assumptions consistent with the Canada Lynx Conservation Assessment and Strategy (CLCAS) (Ruediger et. al 2000).

Modeled lynx habitats of the selected federal parcels are on the periphery of the overall potential lynx habitat in Routt County including the affected portions in Moffat County. Many of the selected federal parcels are completely surrounded by private lands with no public access, are low in elevation, and are in landscapes that are predominately non-forested, non-habitat for lynx. Thus, these modeled potential habitats are unconsolidated, unmanageable, do not have deep snow conditions, and are isolated from other potential habitats with higher suitability. Few Little Snake Field Office lands in Routt County are directly connected to adjacent Routt National Forest modeled lynx habitat. Field visits regarding vegetation and forest cover of all affected parcels (2003-2004) resulted in refining the potential for lynx habitats on the selected parcels based upon Routt National Forest definitions. Thirteen selected federal parcels that have portions of land having potential for lynx habitat are within the Quaker Mountain Lynx Analysis Unit (LAU) and one is in the Lower Elk River LAU.

In the context of Land Ownership, the CLCAS (Ruediger et al. 2000) states: "Lynx exemplify the need for landscape-level ecosystem management. Contiguous tracts of land in public ownership (national forests, national parks, wildlife refuges, and BLM lands) provide an opportunity for management that can maintain lynx habitat connectivity".

The 42,811 acre Quaker Mountain LAU is located northwest of Steamboat Springs, Colorado, north of the Yampa River, west of the Elk River, and south of California Park. This LAU contains a majority of private lands (66.9%) with BLM lands (13.2%), state lands (3.9%) and about 16% Routt National Forest lands. Summer home development and logging has occurred on some of the private lands of the LAU adjacent to the National Forest, but most of the private land involves large ranches. Thirteen selected federal parcels or portions of parcels with a total area of 2,706.62 acres occur within the boundary of the Quaker Mountain LAU. The potential lynx habitat within the Quaker Mountain LAU parcels amounts to 1,687.42 acres in 13 patches ranging in patch sizes of 0.97 acres to 675.12 acres. These thirteen parcels are not contiguous with the Routt National Forest potential habitats at straight-line distances of 1 mile (parcel 21a) to 9 miles (parcel 69). The surrounding lands involve patchy landscape of conifer/aspen, mountain shrub, sagebrush, and agricultural lands. Many of these lands are fenced with barbed wire and sheep fence (4”-square by 3-foot high). Where sheep fence occurs, lynx movement could be difficult.

The Lower Elk River LAU is located due north of Steamboat Springs, north of Soda Creek (Buffalo Pass Road), east of the Elk River, and south of Greenville Creek. This LAU is 77,974 acres in size. The Lower Elk River LAU is largely within Routt National Forest but has 10.4%

of the lands as state or private land inholdings. A small portion of BLM lands had been added to this LAU on the western edge of the Forest (USDA-FS 2004a). Selected federal Parcel 50 occurs within this LAU. The 267.17 acre parcel has 103.16 acres of potential lynx habitat. Parcel 50 is directly contiguous with Routt National Forest potential habitat with non-habitat to the west of it.

6.6.1.2 Offered Non-Federal Parcel

Boreal Toad: The Emerald Mountain parcel has several perennial stock ponds and beaver pond aquatic habitats over 7,000 feet in elevation. However, no boreal toads were found in these habitats.

All parcels with aquatic habitats, including Emerald Mountain, are relatively low in elevation and generally lack forest overstory vegetation to shade the water. This results in very warm air temperatures throughout the snow-free months and virtually eliminates chances of successful boreal toad reproduction. Additionally, the Emerald Mountain Parcel is grazed by livestock, which further reduces suitability for boreal toad due to increased water turbidity.

Yellow-Billed Cuckoo: The Emerald Mountain parcel has mature cottonwoods with a willow understory along Cow Creek, a tributary of the Yampa River. However, these habitats are ephemeral in nature, small and linear-in-size, and thus, have very marginal suitability for the yellow-billed cuckoo. No yellow-billed cuckoos were observed during field reviews.

Bald Eagle: There is no critical habitat designated for the bald eagle on the Emerald Mountain parcel (USDI-FWS, 1983). However, the lower reaches of Cow Creek have limited potential for individual bald eagle roosting. The roosting potential is judged “limited” due to the small patch size and small size of cottonwood habitats of Cow Creek. Cow Creek Road (Routt County Road 45) is a busy county roadway that further reduces the suitability for bald eagles.

Canada Lynx: Field reconnaissance visits to the Emerald Mountain parcel were completed in 2003 and 2004. This 4,404 acre parcel has potentially suitable habitat for lynx in the amount of 2,114 acres, based on Routt National Forest definitions. However, these habitats also have issues of marginal suitability for lynx similar to the Quaker Mountain LAU because they are relatively low in elevation, have highly patchy or fragmented habitat/non-habitat, and they are not contiguous with other more suitable habitats elsewhere. Emerald Mountain is surrounded by thousands of acres of varying habitats, including patches of isolated conifer and aspen, non-habitat (mountain shrub, oakbrush), rural development (agriculture), mining, ranchettes, and the community of Steamboat Springs, which isolates it from the primary lynx habitats in the larger landscape. Nearby land ownership patterns include large Colorado State Land Board parcels to the west, a string of BLM parcels amongst private lands bisected by Routt County Road 29 to the southwest, private ranches/ranchettes to the north and southeast, and the City of Steamboat Springs to the northeast. Potential straight-line travel distances from potential habitats in the Routt National Forest to Emerald Mountain habitats would range from about 4 miles (Walton Creek/ Haymaker Golf Course) to 15 miles (southwest ridgelines to Dunkley Pass) assuming full avoidance of the Steamboat Springs area to the east. As with the Quaker Mountain LAU, where sheep fence occurs, lynx movement could be difficult.

The previous discussions regarding potential lynx habitat on the selected federal parcels and the offered non-federal Emerald Mountain parcel do not assume or predict that lynx would never occur on the parcels, only that the parcels would not serve as suitable resident/reproduction sites for lynx for the reasons stated. The parcels’ utility to lynx would be short-term. Actual use of any parcel in the larger Steamboat landscape (including Quaker Mountain) would be based upon an individual lynx either randomly 'bumping' into suitable habitat while seeking food or for some reason of movement by learning to avoid and negotiate adversities in the landscape over time.

6.6.2 Environmental Consequences

The direct effect of the Proposed Action is the change in land parcel ownership. Specifically, 127 parcels of land owned by the Federal government and managed by the BLM would be transferred to private ownership, and one land parcel (Emerald Mountain) 4,404 acres owned by the State Land Board would be transferred to federal ownership and managed by the BLM.

There are no known individuals or populations of threatened, endangered or candidate species, or areas designated as critical habitat, on any of these parcels.

Boreal Toad: The proposed land exchange would have no direct effects on the boreal toad. Fifteen selected federal parcels with aquatic habitats potentially suitable to the boreal toad would be transferred to private ownership. However, the aquatic habitats of these parcels are isolated from known boreal toad populations, disturbed by livestock grazing, generally low in elevation, lack shade from shrub and tree canopies, and are generally of a low quality. No boreal toads were observed on any of these parcels during the field survey.

The federal government would acquire, and the BLM would manage, numerous potential boreal toad habitats along streams on the offered, non-federal Emerald Mountain parcel. Similarly, these habitats are isolated from known populations, disturbed by livestock grazing, and generally of a low quality. There are no known populations of the boreal toad on any of the land exchange parcels and no toads were observed during the field survey.

Yellow-Billed Cuckoo: The proposed land exchange would have no direct effects on the yellow-billed cuckoo. None of the federal land parcels going to private ownership have suitable habitat for this bird, and the Emerald Mountain parcel which would be acquired by the federal government and managed by the BLM has only marginally suitable habitat. There are no known populations of the yellow-billed cuckoo on any of the land exchange parcels and no yellow-billed cuckoos were observed during the field inventory.

Bald Eagle: The proposed land exchange would have no direct effects on the bald eagle. There are no known bald eagle populations, concentration areas, foraging areas, winter roosts, or nest sites on any of the selected federal parcels going to private ownership. Parcels 2, 50 and 51 have a low potential for individual bald eagle roosting. However, these parcels are close to busy county roads and no evidence of bald eagle use was observed.

There are no known populations, concentration areas, foraging areas, winter roosts, or nest sites on the Emerald Mountain parcel which would be acquired by the federal government and managed by the BLM.

Canada Lynx: The proposed land exchange would have no direct effects on the Canada lynx. Obviously, lynx would not realize which parcels are federal and which are private. All of these parcels are relatively remote, have no public access, and would either be incorporated into adjacent ranch operations, or are within remote areas, unlikely to be developed in the foreseeable future. There is no anticipated destruction, modification or curtailment of potential lynx habitat as a result of the land exchange. Although private ownership would not preclude use by lynx, and would not interrupt the existing connectivity of habitat and populations, there is still an indirect effect due to the loss of regulatory authority associated with these land parcels in the LAU. However, the remoteness of these parcels and the lack of access to these parcels make existing management and regulation by the BLM difficult. Lynx 'traveling to' any of the selected federal parcels currently must move through unregulated private land to get to any federal parcel. If unregulated, undeveloped private land is adverse to lynx, then one would not reasonably expect lynx to successfully reach any of the existing selected federal parcels as an existing condition.

The federal government would acquire the 4,404 acre Emerald Mountain parcel which would be managed by the BLM. This parcel has 2,114.62 acres of potential lynx habitat that is

comparable to the Quaker Mountain and Lower Elk River habitats. Thus, there would be a gain of 324.04 acres of federally owned potential lynx habitat in one consolidated, manageable parcel with existing public access. However, the Emerald Mountain parcel remains very isolated from Routt National Forest potential habitats to the east, southeast and south. The Emerald Mountain parcel would be too small of an area to be managed for lynx by itself, since lynx have such large home ranges (Ruediger et al., 2000).

The change in land ownership would not likely result in physical change of potential lynx habitats or affect lynx usage on the selected federal parcels that become private. The majority of parcels currently having potential lynx habitat would likely be managed in the same manner and would remain as lynx habitat. Lynx would likely utilize these parcels in the same manner in which they are currently used.

Indirect effects of the proposed land exchange are those secondary or subsequent actions that are reasonably certain to occur as a consequence of the land exchange. Six selected federal parcels (12, 13, 15, 78, 102, and 114) could potentially have some level of development in the future. These parcels are either located adjacent to an existing subdivision, are separated from an existing subdivision by lands owned by the exchange participant, or are located in close proximity to state parks or the town of Steamboat Springs. Four additional parcels meet the above criteria (11, 50, 90, and 105) but are unlikely to be developed because the new landowner's stated intent is to place the parcels in a voluntary conservation easement or the parcels would have voluntary deed restrictions that would limit future development. Topographic and other development constraints are present for many of the land exchange parcels that reduce their likelihood of development. Regardless of their location, development of any of these parcels is not reasonably certain.

It is reasonable to assume that the remaining 118 selected federal parcels to be transferred to private ownership would remain in a ranching land use consistent with existing land uses, generally livestock grazing. Specifically, 94 of the remaining parcels would be transferred to one of the grazing lessees, and four would be transferred to the State Land Board. It is reasonably certain that the land use would not change because the surrounding lands are currently available for development and no development is occurring. Thus, private acquisition of the federal parcels is not likely to trigger development. For Canada lynx, the BLM portions of the Quaker Mountain LAU would change from 13.2% to 3.8% and the private portions from 66% to 75%.

The BLM is developing a Resource Management Plan for the Emerald Mountain parcel (See Section 9.0). The plan would consider alternative land uses and evaluate the impact of those land uses on federally listed and candidate species. For a discussion of the potential impacts of the proposed Resource Management Plan alternatives, please see Section 9.5.15. The indirect effects of the land exchange on the federally listed species are discussed below.

The proposed action would have no indirect effects on the boreal toad, yellow-billed cuckoo, or the bald eagle. It is potentially possible that federal funds could be secured for the improvement of bald eagle or Canada lynx habitat on the Emerald Mountain parcel once it becomes federally owned.

Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the Federal Action Areas considered. Future Federal Actions that are unrelated to the Proposed Action are not considered because they require separate ESA Section 7 consultation.

There are no anticipated cumulative effects to any of the federally threatened, endangered and candidate species considered in this Environmental Assessment due to the proposed action, a change in land ownership. The land use on the federally selected land parcels going to private ownership would likely remain the same. For most of these parcels, the existing and post-

exchange land use would likely be livestock grazing. There is the remote potential that some of the parcels could be developed. However, that is not reasonably certain and any such development would be subject to county and federal regulations in some circumstances.

The change in ownership of the non-federal Emerald Mountain parcel to federal ownership would not have any cumulative effect to species considered, in that future actions on federal lands are subject to the National Environmental Policy Act and Endangered Species Act prior to action taking place.

There are no future State, tribal, local, or private actions, reasonably certain to occur, in the action area that would result in cumulative effect to the species considered.

Determination: The BA determined that the proposed land exchange would have no impact on the boreal toad, yellow-billed cuckoo and bald eagle. However, with regard to the Canada lynx, the BA determined that the land exchange "may affect, but is not likely to adversely affect" the Canada lynx. The USFWS reviewed the BA and concurred with these determinations. See Appendix A for the USFWS letter of July 29, 2005 from Allan Pfister to the BLM.

6.6.3 No Action Alternative

Under this alternative, ownership and management of habitat for federally threatened, endangered and candidate species in the selected federal parcels and the offered non-federal parcel would remain unchanged. Management of habitat on small isolated selected federal parcels is problematic at best and non-existent on most parcels. Under this alternative, BLM would not be able to consolidate large patches of habitat. Consolidation would be beneficial from a conservation biology perspective in general, and for bald eagles and Canada lynx in particular.

6.7 BLM Sensitive Species

Table 6.7-1 lists the BLM Sensitive Species for the Little Snake Field Office, and indicates their rarity on Colorado Natural Heritage Program, State, U.S. Forest Service, and Colorado Division of Wildlife lists. The list includes one mammal, nine birds, three fish, one reptile, one amphibian, and 20 plants. Finally, the potential presence of these species on the selected federal parcels and the offered non-federal parcel was evaluated by visits to the parcels and by a review of relevant literature.

All selected federal parcels and the offered non-federal parcel were surveyed by ecologists from Western Ecological Resource and Habitat Concepts in the spring, summer and fall of 2003 and in the fall of 2004, and the suitability of the parcels' habitats to support BLM Sensitive Species was assessed.

No BLM Sensitive Species were observed on any of the parcels during the field surveys. Literature evaluated included Routt National Forest files (USDA-FS 1997), Colorado Natural Heritage Program databases (CNHP 2003), National Diversity Information System internet website – Routt County profiles (NDIS 2005), Colorado Division of Wildlife publications (CDOW 2001, 2002, 2003a, 2003b), the Utah Flora (Walsh, et. al 1987), Colorado Flora: West Slope (Weber, W.A. & R.C. Whitman (2001), Catalog of the Colorado Flora (Weber, W.A. & R.C. Whitman 1992), the Colorado Rare Plant Field Guide (CNHP 1987), the Conservation Status Handbook (CNHP 1999), the Manual of the Plants of Colorado (Harrington 1964), the Nature Serve Explorer web page (2005), and the USDA Plants web page (2005).

Five of the 15 BLM Sensitive Wildlife Species, including four birds and one reptile, are potentially present on the selected federal parcels and the offered non-federal parcel. With regard to plants, none of the 20 species potentially present in the Little Snake Field Office occur in Routt County. None of the species present in Moffat County are likely to occur on the portions of Parcels 16 and 20 present along the eastern Moffat County line (Table 6.7-2).

6.7.1 Affected Environment

6.7.1.1 Selected Federal Parcels

Wildlife Species. One selected federal parcel has an active northern goshawk nest (pers. comm. – R. Skorkowsky, US Forest Service, May 2005). The parcel or area is not disclosed here, to protect the nest from potential harassment and theft of fledglings by falconers. No other nests were found on the selected federal parcels. Many parcels have suitable conditions for nests of northern goshawk, ferruginous hawk, sage grouse, and Columbian sharp-tailed grouse. The selected federal parcels could potentially provide hunting and foraging opportunities for these species at any time should they visit a parcel. Several selected federal parcels have suitable habitat conditions for midget faded rattlesnake and have known occurrences of prairie rattlesnake based on interviews with adjacent landowners. None of these species were observed during field surveys of the parcels. However, the field surveys were brief and occurred only once or twice. Thus, these species are assumed to be present in suitable habitats in absence of further long-term surveys.

Plant Species. The BLM lists 20 Sensitive Plant Species for the Little Snake Field Office (Table 6.7-1). Table 6.7-2 provides information on the habitat type, elevational range and Colorado distribution by county for these species as compiled from a literature review. None of these species occur in Routt County or on those small portions (201 acres) of two parcels located in Moffat County.

6.7.1.2 Offered Non-Federal Parcel

No raptor nests were found on the offered Emerald Mountain parcel. However, the Emerald Mountain parcel does have suitable nesting conditions for northern goshawk, ferruginous hawk, sage grouse (very limited), and Columbian sharp-tailed grouse. The parcel could potentially provide hunting or foraging opportunities for these species. The Emerald Mountain parcel has some suitable habitat conditions for midget faded rattlesnake in the form of rocky draws and outcrops. None of these species were observed during field surveys of the parcels. However, the field surveys were brief and occurred only once or twice. Thus, these species are assumed to be present in suitable habitats in the absence of further long-term surveys.

6.7.2 Environmental Consequences

The proposed land exchange would have no direct effects on any BLM Sensitive Wildlife Species through a change in land ownership. There are no anticipated changes to habitat suitability or availability of the selected federal parcels from existing conditions for midget faded rattlesnake, northern goshawk, ferruginous hawk, sage grouse, and Columbian sharp-tailed grouse. Some threat of harassment or theft of northern goshawk fledglings could conceptually result on one parcel. If this were to occur, the adults would likely flee and would be available to nest at the affected parcel again or choose to nest elsewhere in the future.

Similarly, there are no anticipated changes to wildlife habitat suitability or availability on the offered Emerald Mountain parcel for these species. The Emerald Mountain parcel would be under federal jurisdiction and access, which could provide habitat management for these species according to applicable regulations as a consolidated block of property.

There are no anticipated cumulative effects to any of the BLM Sensitive Wildlife Species because the land use on the selected federal parcels going to private ownership would likely remain the same. For most of these parcels the existing and post-exchange land use would likely be livestock grazing. There is the remote potential that some of the parcels could be developed. However, that is not reasonably certain to occur and any such development would be subject to county and federal regulations in some circumstances.

The change in ownership of the non-federal Emerald Mountain parcel to federal ownership would not have any cumulative effect on the species considered, because future actions on federal lands are subject to the National Environmental Policy Act and Endangered Species Act.

The Proposed Action would not have any direct or indirect impact to BLM Sensitive Plant Species because none occur in Routt County or the 201 acres located in Moffat County.

6.7.3 No Action Alternative

The No Action Alternative assumes that the land exchange would not occur. All selected federal parcels and the offered non-federal parcel would have the relative habitat suitability described in the Affected Environment section above. The selected federal parcels surrounded by private lands with no access would continue to be difficult for the BLM to manage. Wildlife habitat conditions would be subject to livestock grazing under existing permit standards. The offered parcels would continue to be managed by the SLB for their goals, or could be sold off to other entities, as is occurring elsewhere.

6.8 Wastes, Hazardous & Solid

6.8.1 Affected Environment

6.8.1.1 Selected Federal Parcels

An Initial Assessment Report was prepared for the Selected Federal Parcels to satisfy the requirements of Section 120(h) of the Comprehensive Environmental Response, Liability, and Compensation Act (CERCLA) of 1980 (Kraus, 2005a). The report was developed in accordance with the Revised Draft Bureau of Land Management Environmental Assessment Handbook H-2101-4 (January, 1999). The purpose of the Initial Assessment is (1) to determine if any Recognized Environmental Conditions occur on the land exchange parcels or on adjacent properties which might affect the land exchange parcels and (2) to determine if further inquiry is necessary to assess Recognized Environmental Conditions for purposes of appropriate inquiry.

To determine if there is any indication that hazardous materials have been stored for a period of one year or more, released, or disposed of on the Selected Federal Parcels, a search of government records and historical sources was conducted. In addition, the results of a Class III Cultural Survey completed by TRC Mariah Associates, Inc. were used to determine if site reconnaissance visits by BLM employees were necessary. A site visit to Parcel 128 was completed at the request of the exchange proponent Kim Weinstein of Broken Bone Ranch. For the government records search, the following Environmental Protection Agency databases were surveyed via the internet:

- Permit Compliance System (PCS) for NPDES Water Discharge Facilities
- Comprehensive Environmental Response Compensation and Liability System (CERCLIS)
- National Priorities List (NPL)
- Treatment, Storage and Disposal Facilities (TSDF)
- Toxic Release Inventory (TRI) Facilities
- Resource Conservation and Recovery Information System (RCRIS)
- Facility Index System (FINDS)
- Aerometric Information Retrieval System (AIRS)

Following a review of the Class III Cultural Resource Inventory report, inspection of the trash dump on Parcel 128, and the BLM records search, the Initial Assessment concluded that there was no indication of Recognized Environmental Conditions and no further inquiry was necessary. The EPA Envirofacts Facility Databases information revealed no nearby facilities or sites that might affect the subject parcels.

Subsequently, questions were raised concerning potential items and land disturbances on several parcels, specifically:

- Parcel 81: Mining
- Parcel 84: Mining at northern property line
- Parcel 91: Trash dump
- Parcels 102 and 104: Reclaimed mine from Twentymile Coal Company
- Parcel 120: Microwave Tower and Transmission line

The above parcels were visited to determine if they contained any Recognized Environmental Conditions and the results were summarized in the Addendum to the Initial Assessment Report (Kraus, 2005b).

Parcel 81 is bounded to the north by a coal strip mine, but only a perimeter road and topsoil stockpile extend onto the BLM land. The mining area nearest the BLM boundary appears to be in the reclamation process. There was no indication of hazardous substances, although there could be instances of spilled fuel or lubricants from the heavy equipment in use.

Parcel 84 contains part of an active strip mine. The mining activity is along the northern parcel boundary and extends southward onto Parcel 84 for a short distance. At the time of the assessment on September 8, 2005, an electrical distribution building and a dragline were located on private property just north of the BLM boundary. A larger area surrounding the mining appears to have been mined and reclaimed previously. There was no indication of hazardous substances.

Parcel 91 was inspected due to reports of a trash dump on the parcel. Further investigation revealed that the dump was approximately 100 yards north of the northwest corner of the BLM parcel. The parcel boundaries were confirmed with a GPS receiver.

A reclaimed strip mine covers the northwest half of Parcel 102 and a small corner in the northwest of Parcel 104. There was no indication of Recognized Environmental Conditions on the parcels, although there could be instances of spilled fuel or lubricants from heavy equipment. A small spill from leaking hydraulic lines or fueling operations would not be of particular concern.

Parcel 120 is traversed by a high-voltage transmission line and there is a microwave tower along a ridgeline in the east central part of the parcel. The examination revealed no indication of hazardous substances associated with either of these facilities.

The presence of high voltage transmission lines on several of the parcels is not expected to present a risk from hazardous materials. A potential source of hazardous materials might be from discarded materials from the transmission line construction. However, this was not noted in the cultural clearance process.

The negative findings from the inspections of Parcels 81, 84, 91, 102, 104, and 120 provides additional confidence in the decision to use the Class III Cultural Clearance Report in lieu of visits to all of the parcels.

In conclusion, the findings from the site inspections and the July 18, 2005 Initial Assessment Report confirm that no further inquiry is indicated to determine that no Recognized Environmental Conditions exist on the federal parcels involved in the proposed exchange.

6.8.1.2 Offered Non-Federal Parcel

In accordance with Section 120(h) of the Comprehensive Environmental Response, Liability, and Compensation Act (CERCLA) of 1980, an Initial Assessment Report was prepared for the

Emerald Mountain Parcel. To determine if there is any indication that hazardous materials have been stored for a period of one year or more, released, or disposed of on the Emerald Mountain parcel, a search of government records and historical sources was conducted, in addition to site reconnaissance visits. The following Environmental Protection Agency databases were surveyed via the internet:

- Permit Compliance System (PCS) for NPDES Water Discharge Facilities
- Comprehensive Environmental Response Compensation and Liability System (CERCLIS)
- National Priorities List (NPL)
- Treatment, Storage and Disposal Facilities (TSDF)
- Toxic Release Inventory (TRI) Facilities
- Resource Conservation and Recovery Information System (RCRIS)
- Facility Index System (FINDS)
- Aerometric Information Retrieval System (AIRS)

In addition, the Colorado Department of Labor and Employment's Colorado Storage Tank Information System (COSTIS) database was searched for information regarding registered underground storage tanks. Aerial photography was used in conjunction with site reconnaissance visits to identify any notable or questionable features which were subsequently examined in the field.

The site is used primarily for livestock grazing and contains numerous stock ponds and two corrals. The parcel is crossed by three high voltage transmission lines. In addition, a Federal Aviation Administration (FAA) aircraft beacon is located on the property. Approximately 30 acres of the parcel has been clear-cut, but shows no ill effects.

The search of government records and site reconnaissance revealed no Recognized Environmental Conditions or indication of the presence of hazardous materials. The FAA was contacted regarding the aircraft beacon, and it was determined that there are no underground tanks associated with this facility and that it utilizes solar power. No evidence of hazardous materials, petroleum products, or environmental liability was discovered on the Emerald Mountain parcel. No further inquiry is needed to assess Recognized Environmental Conditions.

6.8.2 Environmental Consequences

The presence of hazardous materials on the selected federal parcels is highly unlikely. No environmentally significant land uses on the selected federal land parcels or surrounding properties were identified from the historical records review. In addition, there are no ancillary facilities associated with any power lines (i.e. generation stations) on any of the selected federal parcels.

The Initial Assessment for the non-federal parcel (Kraus, 2003) indicates there are no Recognized Environmental Conditions which would bar acquisition of the offered non-federal parcel and that no further inquiry is needed. The federal government would not be receiving or transferring any hazardous wastes to private ownership in this land exchange.

6.8.3 No Action Alternative

There are no hazardous wastes, so there would be no effect under the No Action Alternative.

6.9 Wetland & Riparian Habitat

6.9.1 Affected Environment

6.9.1.1 Selected Federal Parcels

Sixty-four selected federal parcels have one or more riparian-wetland habitats. Table 6.9-1 identifies the parcels with riparian-wetland habitat, estimates the area of these habitats, and provides a brief description. The total area of the riparian-wetland habitat on all selected federal parcels is 207.90 acres.

Table 6.9-2 summarizes the acreage of wetlands and aquatic habitat on the exchange parcels, as defined by the 1987 US Army Corps of Engineers' Wetland Delineation Manual. There are approximately 57.77 acres of potentially jurisdictional wetlands and about 36.36 acres of potentially jurisdictional aquatic habitat on the selected federal parcels.

The wetland and riparian habitats identified on the selected federal parcels contain a diversity of plant communities, based upon their hydrology, topography, and land use history. In general, the most heavily grazed areas are characterized by a high proportion of non-native species and a low vegetative cover, particularly in areas with a seasonal water supply. In contrast, other parcels have large perennial streams, contain extensive beaver dam complexes and support dense, high quality wetland and riparian complexes. These habitats can be broadly categorized into forested, scrub shrub wetlands, and herbaceous communities. The riparian-wetland habitats are described below.

<u>Forested Riparian and Wetland Habitats.</u> Forested riparian/wetlands occur throughout the project area, and are most common along perennial streams, however they can also occur along ephemeral streams or at isolated seeps or springs. The best developed riparian habitats occur along the Little Snake River near Wyoming, along Elkhead Creek north of Hayden, along Day Creek near Round Mountain, along the East Fork of the Williams Fork River south of Hayden, and along Trout Creek west of Oak Creek. Along higher elevation streams, riparian communities are dominated by subalpine fir, Engelmann spruce *(Picea engelmannii)*, blue spruce *(Picea pungens)*, and/or aspen *(Populus tremuloides)*. Common shrubs in this diverse assemblage of communities include thinleaf alder *(Alnus incana ssp. tenuifolia)*, serviceberry *(Amelanchier alnifolia)*, redosier dogwood *(Cornus sericea)*, Woods' rose *(Rosa woodsii)*, snowberry *(Symphoricarpos rotundifolius)*, bush honeysuckle *(Distegia involucrata)*, red elderberry *(Sambucus microbotrys)*, and willows *(Salix drummondiana, S. monticola, S. geyeriana*, *S. bebbiana)*. The herbaceous understory is equally variable, often containing graminoids such as water sedge *(Carex aquatilis)*, beaked sedge *(Carex utriculata)*, bluejoint reedgrass *(Calamagrostis canadensis)*, redtop *(Agrostis gigantea)*, Rocky Mountain rush *(Juncus saximontanus)*, timothy *(Phleum pratense)*, blue wildrye *(Elymus glaucus)*, and smallwing sedge *(Carex microptera)*. Forb diversity is somewhat higher, including arrowleaf groundsel *(Senecio triangularis)*, northern willowherb *(Epilobium ciliatum)*, heartleaf bittercress *(Cardamine cordifolia)*, cow parsnip *(Heracleum sphondylium* ssp. *montanum)*, monkshood *(Aconitum columbianum)*, chiming bells *(Mertensia ciliata)*, goldenglow *(Rudbeckia ampla)*, bluntseed sweet cicely *(Osmorhiza depauperata)*, hemlock parsley *(Conioselinum scopulorum)*, field horsetail *(Equisetum arvense)*, Fendler meadowrue *(Thalictrum fendleri)*, nettleleaf giant hyssop *(Agastache urticifolia)*, and heartleaf arnica *(Arnica cordifolia)*, to name a few.

Forested wetlands that occur around springs and seeps are often surrounded by aspen and consist of scattered Geyer willow *(Salix geyeriana)* and a dense graminoid layer over organic rich soils. Common plant species include beaked sedge, water sedge, and bluejoint reedgrass. Other graminoids may include fowl mannagrass *(Glyceria striata)*, spike woodrush *(Luzula spicata)*, alpine timothy *(Phleum commutatum)*, fowl bluegrass *(Poa palustris)*, and Rocky Mountain rush. Common forbs include various willowherbs *(Epilobium spp.)*, nodding ragwort *(Ligularia bigelovii)*, field horsetail, largeleaf avens *(Geum macrophyllum)*, leafy bracted aster

(Aster foliaceus), false hellebore *(Veratrum tenuipetalum)*, arrowleaf groundsel, chiming bells, and monkshood.

At lower elevations, generally below 7,500 feet, narrowleaf cottonwood *(Populus angustifolia)* forests are more common and support a shrub layer composed of alder, chokecherry *(Prunus virginiana)*, serviceberry, snowberry, mountain maple *(Acer glabrum)*, river hawthorn *(Crataegus rivularis)*, Woods' rose, and/or various willows. Silver sage and shrubby cinquefoil *(Pentaphylloides floribunda)* often occur on the river terraces where cottonwood density is lower. In the herbaceous understory, graminoids such as Baltic rush *(Juncus arcticus ssp. ater)*, redtop, and Rocky Mountain rush are present, occurring with forbs such as yampa *(Perideridia gairdneri* ssp. *borealis)*, goldenglow, Fendler meadowrue, yarrow, and stinging nettle *(Urtica gracilis)*. The narrowleaf cottonwood forests are often heavily grazed by livestock and hence contain numerous pasture grasses and weeds including redtop, timothy, orchard grass, Kentucky bluegrass, and reed canarygrass *(Phalaris arundinacea)*.

Scrub-shrub Riparian and Wetland Habitats. Scrub-shrub wetlands generally occur in broad, low gradient drainage bottoms and are dominated by willows. Willow species include mountain willow, Booth's willow *(Salix boothii)*, Geyer willow, Drummond willow and/or sandbar willow *(Salix exigua)*. The understory may be composed of fowl bluegrass, water sedge, largeleaf avens, northern willowherb, fowl mannagrass, and cow parsnip in the wetter portions, while the drier areas at the periphery support bluejoint reedgrass, Canada goldenrod *(Solidago canadensis)*, fireweed *(Epilobium angustifolium)*, Kentucky bluegrass, and timothy. These communities are often flanked by silver sagebrush communities. Alder dominated wetland and riparian areas occur along a variety of stream channels and at isolated hillside seeps. These communities are composed of alder with occasional willow, and the understory may be composed of bluejoint reedgrass, small wing sedge, American mannagrass *(Glyceria grandis)*, Rocky Mountain rush, beaked sedge, fowl bluegrass, nodding ragwort, white globemallow *(Sidalcea candida)*, and largeleaf avens.

Herbaceous Riparian and Wetland Habitats. Herbaceous wetlands occur at the lower elevation parcels where forests do not predominate and along intermittent or ephemeral streams where forested or scrub-shrub types do not occur. Herbaceous wetlands may also be found around the various stock ponds or beaver dam complexes at all elevation ranges. These wetlands are generally composed of dense stands of redtop, fowl bluegrass, beaked sedge, mannagrass species, and Nebraska or water sedge *(Carex nebrascensis, C. aquatilis)* in the saturated soils, creeping spikerush *(Eleocharis palustris)* and beaked sedge in shallow water habitats, and burreed *(Sparganium angustifolium)*, water plantain *(Alisma triviale)*, and pondweed *(Potamogeton sp.)*, or water lily *(Nuphar lutea ssp. polysepala)* in the deeper water areas.

6.9.1.2 Offered Non-Federal Parcel

Table 6.9-3 identifies the riparian-wetland habitats on the offered non-federal Emerald Mountain parcel. There are 38 riparian-wetland habitats with a total area of 108.44 acres. There are approximately 26.22 acres of potentially jurisdictional wetlands and about 8.99 acres of potentially jurisdictional aquatic habitat (Table 6.9-2). The riparian-wetland habitats on the Emerald Mountain parcel are described below.

The wetland and riparian habitats of Emerald Mountain occur along Cow Creek and the various ephemeral drainages. Most of the ephemeral drainages on Emerald Mountain have been degraded by livestock grazing and contain a high proportion of agricultural species and weeds. These drainages are dominated by redtop, an introduced but widely naturalized agricultural species. Other species present include meadow barley *(Hordeum brachyantherum)*, Nebraska sedge, Kentucky bluegrass, and timothy, as well as the forbs white Dutch clover *(Trifolium repens)*, goldenglow, Canada goldenrod, field mint *(Mentha arvensis)*, and occasionally false hellebore. Abundant weeds include tarweed, curly dock *(Rumex crispus)*, houndstongue, and Canada thistle. Erosion and incised channels due to overgrazing occur in many areas.

Wetland seeps or drainages that occur in aspen or fir forests commonly contain alder, bush honeysuckle, goldenglow, American speedwell, northern willowherb, arrowleaf groundsel, largeleaf avens, monkshood, and smallfruit bulrush *(Scirpus microcarpus)*. Scattered alders and willows may also occur.

Forested and scrub-shrub riparian habitats mainly occur along Cow Creek, however some forested riparian areas also occur along the lower portions of the larger ephemeral drainages just east and west of Cow Creek or in the northern portion of the parcel. In general, mature narrowleaf cottonwood form a continuous band along these watercourses with an understory of silver sagebrush, Woods' rose, snowberry, and numerous pasture grasses and weeds. In heavily grazed areas, vegetative cover is reduced and pasture grasses and weeds are the dominant herbaceous vegetation. The northern portion of Cow Creek, which has perennial flows, supports a dense scrub-shrub riparian/wetland area consisting of a sandbar willow shrubland and young narrowleaf cottonwoods. Other shrubs in this area include Booth's willow and hawthorn. The understory includes redtop, field mint, and curly dock, with small patches of Nebraska sedge and smallfruit bulrush. Other species present include Canada goldenrod, leafy bracted aster, northern willowherb, and stinging nettle. Portions of this northern area of Cow Creek are deeply incised and braided.

6.9.2 Environmental Consequences

Under the Proposed Action, 64 selected federal parcels with approximately 207.90 acres of riparian-wetland habitat would be transferred to private ownership, and the BLM would acquire approximately 108.44 acres of riparian-wetland habitat on the Emerald Mountain parcel. This represents a net loss of approximately 99.46 acres of riparian-wetland habitat.

With regard to potentially jurisdictional wetlands, 58 parcels with approximately 57.77 acres of potentially jurisdictional wetlands would be transferred to private ownership, and the BLM would acquire approximately 26.22 acres of potentially jurisdictional wetlands on the Emerald Mountain parcel. This represents a net loss of 31.55 acres of potentially jurisdictional wetlands to the BLM. However, all wetlands on parcels transferred to private ownership would still be protected by federal wetlands regulations enforced by the U.S. Army Corps of Engineers, which would require a wetland permit to impact any of these wetlands. The Corps would also require wetland mitigation for any wetland impacts, usually onsite and with a minimum impact to creation ratio of 1:1. Furthermore, there are no foreseeable plans for the development of any of the selected federal parcels. Thus, changing the ownership of wetlands would not result in any impact to wetlands.

6.9.3 No Action Alternative

Under the No Action Alternative, ownership and management of potentially jurisdictional wetlands, aquatic habitats, and riparian habitats would remain unchanged. The BLM would still be responsible for the management of 57.77 acres of wetlands, 36.36 acres of aquatic habitat, and approximately 150.13 (207.9 – 57.77) acres of riparian habitat. However, the BLM has access to only 16 of the 58 selected federal parcels with wetlands, and only to 11 of the 69 selected federal parcels with riparian habitat. Thus, BLM management of these resources is restricted by a lack of access. The SLB would still be responsible for the management of 26.22 acres of potentially jurisdictional wetlands, 8.99 acres of aquatic habitat, and 82.22 acres (108.44 – 26.22) acres of riparian habitat on the offered non-federal Emerald Mountain parcel.

6.10 Environmental Justice

6.10.1 Affected Environment

As required by Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," federal agencies are asked to consider the composition of an affected area to determine whether minority populations, low-income populations, or Native American tribes are affected by actions proposed by that agency and

whether there would be disproportionately high and adverse human health or environmental effects on these populations.

6.10.2 Environmental Consequences

The proposed land exchange would not have an adverse impact on minorities, low-income, or Native American populations. No sacred sites have been identified within the planning area, and consultation with all affected Native American tribes was initiated early in the planning process. Consequently, management actions resulting from the proposed exchange would not have adverse impacts to minority populations, low-income populations, or Native Americans.

6.11 Native American Religious Concerns

The BLM notified the following Native American groups of the proposed Emerald Mountain Land Exchange project in September 2004: Southern Ute Tribe, Ute Mountain Ute Tribal Council, Colorado Commission of Indian Affairs, and the Uintah and Ouray Tribal Council. No concerns regarding traditional or religious cultural properties or places were identified that would affect this project or the alternatives (correspondence on file at BLM Little Snake Field Office in Craig, Colorado).

7.0 Non-Critical Resources

Non-Critical Resources not relevant to the land exchange and not evaluated in this EA include Wild Horses/Burros, Forest Management, and Visual Resources.

7.1 Access

7.1.1 Affected Environment

7.1.1.1 Selected Federal Parcels

Each of the selected federal parcels was analyzed to determine if public access exists. County roads, state roads, U.S. highways, and/or BLM routes were considered as public access roads. Of the 127 selected federal parcels, 15 have public access (Table 7.1-1). These 15 parcels total 1,778 acres.

7.1.1.2 Offered Non-Federal Parcel

The Emerald Mountain parcel is accessed by Cow Creek Road (Routt County Road 45), the Ridge Road Trail from the top of Blackmere Drive, the Agate Creek Trail across DOW property and easement off the Twenty Mile County Road in section 16.

7.1.2 Environmental Consequences

Fifteen of the Selected Federal Parcels have roadways that provide public access across the parcel. All of these easements would be reserved when the exchange is completed, thus public access across these 15 parcels would be maintained.

Exchanging the 15 selected federal parcels with public access does not exclude access to larger acreages of BLM property, because all of the 15 exchange parcels are surrounded by private land or another exchange parcel. The county road access to the offered non-federal Emerald Mountain parcel would allow the BLM and the public access for the land uses designated in the RMP (See Section 9.0).

7.1.3 No Action Alternative

Under the No Action Alternative, the BLM would continue to own and manage 15,528 acres of public land on which public access is limited to 1,778 acres. Public access would remain the same and the roads would continue to be open to motorized vehicles. The BLM would not acquire and provide public access to the 4,404 acre Emerald Mountain parcel.

7.2 Minerals – Fluid & Solid

7.2.1 Affected Environment

7.2.1.1 Selected Federal Parcels

A detailed Mineral Potential Report was prepared by the BLM (Conrath, 2004) for BLM parcels involved in the Emerald Mountain Land Exchange. In August 2004, an addendum was prepared to include eleven additional parcels. Specific mineral commodities addressed in the report include coal, oil and gas, geothermal energy, gold, base metals, uranium, fluorspar, and sand and gravel. The mineral potential for each parcel described in the report is a prediction of the likelihood of the occurrence of these resources. The occurrence of a mineral resource does not necessarily imply that the mineral can be economically exploited or is likely to be developed in the near future; mineral occurrence potential includes both exploitable and potentially exploitable occurrences. Therefore, the Mineral Potential Report also evaluates the surface use interference with potential development of the mineral estate, and recommends what action should be taken toward disposal or retention of the federal mineral estate.

A number of data sources were used in preparing the Mineral Potential report, and the author conducted on-site visits of many of the parcels. Based on the available data concerning a particular exchange parcel, potential was assessed as indicated by the geologic environment, the inferred geologic processes, reported mineral occurrences, valid geochemical and/or geophysical anomalies, and by the presence of known mines or deposits. The assessment of potential was reported in accordance with the Mineral Potential Classification System included in BLM Manual 3031, which provides for a ranking of the level of potential as well as the level of certainty.

Table 7.2-1 provides a Mineral Potential Summary for the selected federal parcels. With regard to leasable minerals, 34 parcels have a moderate potential for coal, four have a high potential for coal, five have a moderate or high potential for oil and gas, and four have a moderate geothermal potential. Three parcels have a moderate potential for gold, nine have a moderate potential for aggregate, and one has a moderate potential for meta-shale.

Table 7.2-2 documents the current mineral-related encumbrances. Two parcels, 81 and 84, have existing coal leases, and 52 have oil and gas leases. The Mineral Potential Report recommends that the federal government continue to honor all valid existing coal and oil and gas leases on parcels that are ultimately privatized under this land exchange process. However, this would require the government to reserve the minerals underlying each of these parcels, thereby creating a split estate ownership.

Because a split estate may decrease management efficiency, it is the BLM's desire to minimize split estates on the exchange parcels. Therefore, a Mineral Conveyance Assessment was completed which also evaluated mineral ownership patterns and sizes, and includes the final determinations on mineral conveyance for each BLM parcel in the Emerald Mountain Land Exchange. The Mineral Conveyance Report contains a detailed rationale for the conveyance or retention of minerals for each parcel. The determinations of the report are summarized in Table 7.2-2.

7.2.1.2 Offered Non-Federal Parcel

Fred Conrath of the BLM prepared a Mineral Potential Report (2005) for the Emerald Mountain parcel to determine if minerals are present. Specific mineral commodities addressed in the report include coal, oil and gas, geothermal energy, gold, base metals, uranium, fluorspar, and sand and gravel. The mineral potential described in the report is a prediction of the likelihood of the occurrence of these resources. The occurrence of a mineral resource does not necessarily imply that the mineral can be economically exploited or is likely to be developed; mineral occurrence potential includes both exploitable and potentially exploitable occurrences.

As determined by the Mineral Potential Report, the oil and gas potential for the Emerald Mountain parcel is low and there is no potential for other leasable minerals such as geothermal and coal. Saleable and locatable minerals also have no potential within the parcel except for clays and shales which have a low potential.

Due to the low mineral potential on the Emerald Mountain Parcel, the Mineral Potential Report recommends that the mineral estate should be withdrawn from mineral entry and leasing following the land exchange. This would prevent speculative leasing to gain access to the parcel as well as fraudulent mining claims that could be used for surface occupancy residences near the city of Steamboat Springs.

7.2.2 Environmental Consequences

As summarized by Table 7.2-2 from the Mineral Conveyance Assessment (Conrath 2005), the entire federal mineral estate would be conveyed to private ownership on 60 parcels, and entirely retained on 13 parcels. The coal estate only would be retained on 54 parcels. No high potential minerals would be conveyed. On 10 parcels with a moderate mineral potential, the mineral estate would be conveyed due to isolation from larger similar mineral estates, difficult access, and their small size. All mineral rights on the offered non-federal parcel would be transferred to the BLM.

The oil & gas estate would be conveyed on 43 Selected Federal Parcels that have current oil & gas leases. A total of 48 oil and gas leases would be impacted by the exchange. The oil and gas rights are conveyed subject to leases issued under the Mineral Leasing Act of 1920, as amended, and the United States reserves for the duration of the said leases unto itself all the rights of the lessor under said leases (including, without limitation, the right to collect royalties and extend the lease pursuant to its terms and applicable law and regulation).

This exchange is made under Section 29 of the Act of February 25, 1920 (30 U.S.C. 186), and the Act of March 4, 1933 (30 U.S.C. 124), and the patent is issued subject to the rights of prior permittees or lessees to use so much of the surface of said land as is required for operations, for the duration of the oil and gas lease and any authorized extensions of that lease.

The oil & gas estate would be retained on nine parcels that have a total of 12 current leases. The coal estate would be retained on two parcels that each has one current lease. The BLM would continue to administer coal and oil & gas leases on those parcels where the mineral estate is entirely or partially retained.

7.2.3 No Action Alternative

Ownership of mineral resources and rights would not be changed under the No Action Alternative.

7.3 Range Management

7.3.1 Affected Environment

7.3.1.1 Selected Federal Parcels

As summarized by Tables 7.3-1 and 7.3-2, 116 of the Selected Federal Parcels have current grazing leases, and 12 parcels are not leased for grazing. The 114 parcels are included within 56 different grazing allotments, with a grand total of 3,895 AUMs on the land exchange parcels.

All of the grazing leases on the Selected Federal Parcels are Section 15 Allotments, which are outside of the BLM Grazing District. Since 1990, all of these allotments have been categorized as “C” or Custodial. This categorization means that these allotments have low potential for useable livestock forage, low potential for resource conflicts or public controversy, resource conditions are within desired parameters, or a combination of these factors. These C Category allotments are located on isolated parcels of BLM land which are largely surrounded by private

lands owned or leased by the grazing lessee. For this reason, it is difficult for the BLM to effectively manage these parcels due to access limitations and/or their limited size makes meaningful management actions difficult.

7.3.1.2 Offered Non-Federal Parcel

The Emerald Mountain Parcel currently has two multiple-use leases that permit grazing as well as recreational use, as summarized by Table 7.3-3. Grazing permitted under these two leases is based on a grazing capacity of 6.5 acres/AUM.

7.3.2 Environmental Consequences

Forty-one of the grazing allotments on the Selected Federal Parcels, totaling 2,836 AUMs, are located entirely on the land exchange parcels and would therefore be cancelled following the land exchange. In addition, portions of another 15 allotments, totaling 1,059 AUMs, are located on the land exchange parcels. Those 15 allotments would be reduced by a total of 1,059 AUMs if the exchange is completed.

Thirty-three of the Selected Federal Parcels contain grazing allotments that are leased to parties other than the exchange proponent (Table 7.3-1). These lessees may lose grazing opportunities on lands which are being transferred to private ownership. However, it should be noted that 13 of the 33 parcels contain two grazing allotments, and ten of these have one lessee as the exchange proponent. For eight of these parcels, the grazing lessee with the largest number of AUMs is the exchange proponent. On Parcel 84, the exchange proponent has stated that he would continue to provide a grazing lease to the current BLM lessee.

Most of the selected federal parcels which would be transferred to private ownership are well-suited for livestock grazing, and for this reason, management of lands being transferred to the grazing permittee would remain largely unchanged.

Current leases on the Emerald Mountain Parcel expire in March 2006, and these would not be renewed if the land exchange is completed. Existing grazing use permitted on the Emerald Mountain Parcel would continue after BLM acquisition, but levels of grazing to be permitted would be determined by the BLM Resource Management Plan, which may result in an increase, decrease, or no change from current levels of grazing as well as specifications in season of use or other variables as resource conditions and operator needs dictate.

Many of the BLM grazing leases that would be turned over to private ownership are difficult and cumbersome to manage. Most of these leases are small in terms of the amount of available forage and the grazing receipts collected from that forage. BLM's costs involved in administering these leases, including issuing annual applications, annual billing, and lease renewal every three to ten years are far greater than the costs returned to the public from grazing receipts. BLM's administrative costs for each allotment differ little regardless of whether an allotment is rated at 300 AUMs or 3 AUMs. In 2005, the typical renewal of a grazing lease (regardless of its status in the exchange) cost BLM roughly $1,100. Based on this, lease renewals on the 41 allotments that would be eliminated would cost an estimated $45,100 over a ten year period. The effect of the exchange would be to reduce BLM's administrative costs of lease renewals from $45,100 to $2,200, a savings of $42,900 over ten years.

7.3.3 No Action Alternative

Under the No Action Alternative, the availability of public grazing allotments would remain unchanged. The BLM would retain the management responsibility for issuing and overseeing these leases. The BLM would not acquire management responsibilities for the Emerald Mountain Parcel.

7.4 Realty Authorizations

7.4.1 Affected Environment

7.4.1.1 Selected Federal Parcels

The Little Snake Field Office has 59,000 acres of land in Routt County, all of it scattered throughout the county and most of it surrounded by private land with no public access. Of the 15,528 acres in 127 parcels identified in the exchange, 11,762 acres are not accessible to the general public (Table 7.1-1). More than half (55%) of the parcels are less than 41 acres in size.

The conveyance of these scattered, isolated parcels of public land within Routt County and acquisition of Emerald Mountain would greatly improve BLM's ability to efficiently and proactively manage the Emerald Mountain property for the public benefit. By consolidating the public land ownership pattern in Routt County, access conflicts on small isolated parcels would be eliminated or reduced. Specifically, trespass from public land onto private would be reduced, and lack of public access to public land would be eliminated or reduced.

Sixty-eight of the selected federal parcels have encumbrances including mineral leases and rights-of-way. Specifically, 52 of the parcels have oil & gas leases, two parcels have coal leases, and 22 have rights-of-way including roadways; railroads; pipelines; power facilities; electrical transmission lines; water and irrigation facilities; alluvial wells, flumes, and sedimentation ponds; communication sites; and telephone and telegraph transmission lines. Existing encumbrances on the Selected Federal Parcels are summarized in Table 7.4-1.

7.4.1.2 Offered Non-Federal Parcel

Emerald Mountain, a 4,404 acre parcel, is owned by the Colorado State Land Board (SLB). The SLB's charter is to maximize the economic potential of its lands for the benefit of Colorado's public schools. In many cases the land is sold to a private developer. The State Land is not public land and most State Land does not have public access.

One of the objectives of the Little Snake Field Office Resource Management Plan is to consolidate the public land ownership pattern in Routt County. The acquisition of the Emerald Mountain parcel would benefit BLM by increasing management efficiency and the public by opening up more public land to public access. This would enable BLM management of an entire landscape instead of numerous small isolated parcels.

Existing encumbrances on the Emerald Mountain parcel include ten rights-of-way: three roadway easements, five electrical transmission lines, and one communications line and one air navigation site. These encumbrances are summarized in Table 7.4-2.

The Emerald Mountain Parcel would be adjacent to two existing land conservation easements (no public access) of approximately 712 acres to the Northeast and 971 acres to the Southeast. There are two separate easements for the Ridge Trail (non-motorized) and Agate Creek Trail (non-motorized and currently non-mechanized) which provide limited public access across these private lands. The Emerald Mountain Parcel is also adjacent to 680 acres of Colorado Division of Wildlife (DOW) property to the East. The DOW property is open to the public for hunting by foot and horseback and contains a small non-motorized/non-mechanized portion of the Agate Creek Trail (seasonal restrictions). See Figure 3.

7.4.2 Environmental Consequences

The land exchange would result in a net gain of management efficiency. There would be savings in cost and time associated with administering 127 isolated parcels including 22 individual rights-of-way, resolving trespass and access issues. This is a benefit to the BLM, the general public and taxpayers. This is an opportunity for the BLM to accomplish its objective

and at the same time put Emerald Mountain into public ownership, a long-term goal of the local community.

The State parcel, Emerald Mountain, if not exchanged with the BLM for the scattered parcels offered, would be sold for development, and this piece of Routt County open space would be lost.

There are 68 selected federal parcels encumbered by rights-of-way and permits. When the land exchange is completed, the patents for federal parcels would either be issued subject to those rights, or agreement would be reached with the holders of these authorizations as to the appropriate disposition of the authorization.

Fifteen of the selected federal parcels have roadways that provide public access (Table 7.1-1). All of these easements would be reserved when the exchange is completed, thus public access across these 15 parcels would be maintained.

Each parcel has been evaluated on an individual basis to determine whether the mineral estate should be conveyed or retained when the exchange is completed (Conrath, 2005a). As summarized in Section 7.2 and Table 7.2-2, 48 oil & gas leases located on 43 of the Selected Federal Parcels would be cancelled when the oil & gas estate is transferred to private ownership. The oil & gas estate would be retained on nine parcels, which contain a total of 12 leases. The coal estate would be retained on two parcels with a total of two current coal leases. The BLM would continue to administer coal and oil & gas leases on parcels where all or a portion of the mineral estate is retained.

There are no current mineral leases on the Emerald Mountain Parcel. Due to the low mineral potential on the parcel, the Mineral Potential Report recommends that the mineral estate should be withdrawn from mineral entry and leasing following the land exchange.

7.4.3 No Action Alternative

There would be no change to the existing encumbrances on the Selected Federal Parcels and the Emerald Mountain Parcel if the exchange is not completed.

7.5 Recreation/Travel Management

7.5.1 Affected Environment

7.5.1.1 Selected Federal Parcels

The predominate form of recreation on the parcels selected for exchange is hunting and hunting related activities including camping and all-terrain-vehicle (ATV) use. Wildlife viewing, hiking, camping, mountain biking and photography occur to a lesser extent. Recreation opportunities for the general public are limited because of the relatively small size of the parcels and lack of public access. No hard data exists on the numbers of people using the individual parcels or in aggregate. Although hunting is a major recreational pursuit in Northwest Colorado with thousands of participants, it is reasonable to assume that use levels are quite low in most of these parcels because of public access issues.

Natural Resource Recreation Settings descriptions are defined in the Appendix. The Existing Physical, Social, and Administrative Classes have not been defined for the exchange parcels and would vary depending on the location.

The current RMP travel management designations are "open" in all except two of the parcels proposed for exchange. This means any type of vehicle can technically go anywhere on these parcels if they have legal access. Travel management on the two other parcels (EMP # 005 and # 006 in T12N, R 88W) is closed to all motorized vehicles except snowmobiles. Public access is generally limited and most vehicular use occurs on existing roads and trails.

Recreational use of OHVs is considered to be very low except in association with hunting. Consequently, travel management impacts have been generally low or moderate in these areas. Public access on the majority of these parcels is limited to adjacent landowners, family and their guests. Landowners do allow a small amount of public access by permission or by payment of "trespass fees". Access to public lands across private property is in particularly high demand during hunting season. Trespass hunting fees can be very pricy as a result.

Parcel 16 has National Forest System Road (NFRS) 123 passing through private and BLM lands for 3.5 miles to the Forest boundary. The U.S. Forest Service holds the easement to this road through the Public Lands and private lands for public access. The easement is 30 feet in width and 9,000 feet in length on the Public Lands. This road is classified by the Forest Service as a Level 2 maintenance road, which is a low standard road recommended only for high clearance vehicles. The Forest Service applied some spot gravelling to the road in 2005 to mitigate some of the sections of this road that become difficult to travel when it is wet, but retained the Level 2 classification of this road.

NFSR 123 provides a key public access point to the National Forest from Routt County Road (RCR) 76. Parcel 24 is located along RCR 76, about one mile south of the NFSR 123 intersection with RCR 76. During the fall big game hunting seasons, Parcel 24 provides camping and horse trailer parking opportunities for hunters who mostly access the National Forest from NFSR 123. Parcel 24 is heavily used by the public during this time of the year, where several large camps are set up and a couple dozen horse trailers are parked. Because of the difficult driving conditions that result when NFSR 123 becomes wet, hunters with large campers and/or horse trailers utilize Parcel 24 for staging and camping where they then access the National Forest on NFSR 123 by horses or all terrain vehicles.

Visual Resource Management (VRM) classifications for the exchange parcels include: Class II (low levels of landscape change allowed); Class III (moderate levels of landscape change allowed); Class IV (major modification of landscape change allowed)

7.5.1.2 Offered Non-Federal Parcel

Recreation on the offered non-federal parcel (Emerald Mountain) is limited to uses allowed by the State Land Board Grazing permittees. The Permittees do not allow recreational use to the general public at this time. Limited recreational use occurs by the permittees, families, friends, and by fee arrangements. Recreational activities primarily consist of hunting and horseback riding with very low levels of use.

Natural Resource Recreation Settings descriptions are defined and shown in the Appendix. The Existing Physical Classes are Front Country along Cow Creek Road and the Power Line and Middle Country everywhere else. The existing Social Class is Primitive. The existing Administrative Classes are Front Country along Cow Creek Road and the Power Line and Middle Country everywhere else.

The State Land Board does not have a travel management plan for this parcel. Vehicular use is controlled by the permittees and is limited to existing improved routes and ATV use in association with ranching and outfitted hunting operations. Access is across private property and/or locked gates. Use levels and impacts are very low.

Visual Resource Management (VRM) classifications for the acquisition parcels include: Class II (low levels of landscape change allowed - low levels of landscape change allowed and should not attract the attention of casual observers. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant features of the landscape).

7.5.2 Environmental Consequences

The Land Exchange would result in a net gain in the quality and variety of recreational uses of the acquired land. The acquired land is more accessible and better suited to different

recreational activities. Use levels would increase significantly because the increased public access and proximity to the resort community of Steamboat Springs. Use levels and activities may be limited by BLM management needs but the overall result would be positive in terms of recreational benefits to communities in Northwest Colorado and visiting publics. Local residents have already expressed high level of interest in recreational use of the acquired lands. The desired Natural Resource Settings would be attained resulting in a positive impact on recreation opportunities and benefits. There would be a relatively small loss of public recreational opportunities and benefits in the proposed exchange parcels.

The Emerald Mountain parcel would provide unparalleled recreational opportunities and benefits for residents of the Steamboat Springs area, Northwest Colorado and visitors from all over the world. Emerald Mountain would complement the adjacent destination resort community of Steamboat Springs and offer many new partnership opportunities. The acquisition of this area would provide connections to several existing or proposed recreational trail easements on the East side of Emerald Mountain. The proposed trail connections to the Emerald Mountain parcel include: the Ridge Trail (non-motorized) which extends across private property and connects to the top of Blackmere Drive on City of Steamboat Springs property; and the Agate Creek Trail (non-motorized and currently non-mechanized) which extends across private property and a corner of Colorado Division of Wildlife property. These trails would connect with the Yampa River core trail and the extensive Northwest Colorado regional trail network. There would be a moderate to major positive recreational impact from the opportunities and benefits of the interconnected trail system. There would also be significant positive recreational impacts from potential connections to the existing City of Steamboat Springs Nordic ski trail system on Howelsen Hill.

There would be minor negative travel management impacts on the exchange parcels due to relatively a small loss of OHV opportunities primarily for hunters. Approximately seventy five percent of these areas are not accessible to the general public. Loss of OHV use would primarily impact adjacent landowners and their family and friends.

As the U.S. Forest Service holds the easement to NFSR 123 through the Public Lands and private land, retention of the easement through the Public Lands proposed for disposal in the proposed action would guarantee legal public access to portions of the National Forest of which this road provides.

Disposal of Parcel 24 would result in the loss of the staging and camping area in this parcel along RCR 76. This would cause a great deal of dissatisfaction as many of the hunters in this area have equipped themselves, either with horse or all terrain vehicle, to utilize this camping and staging area. Many of these hunters may attempt to park along RCR 76, which is a single lane road in order to use NFSR 123 to access National Forest Lands. This will result in road congestion and public safety problems.

Travel management impacts on the acquired lands would depend on the selected alternative and subsequent travel management planning. The range of alternatives includes possible OHV and mechanized access on designated roads and trails and closed OHV travel areas. Travel management limitations would provide some resource protection. Increased negative resource impacts would occur unless the area is closed to OHVs.

The VRM impacts would be moderately positive because the exchange parcels, which are mostly class III and IV, would be exchanged for Class II acquisition parcel which offer greater scenic value to the public.

7.5.3 No Action Alternative

The no action alternative would result no change in existing recreational activities or use of the proposed exchange parcels. There would be no significant impacts to these parcels.

Recreational impacts to the proposed acquired lands would not occur from the perspective of the Federal Government if the exchange does not take place.

The no action alternative would result no change in travel management for the proposed exchange parcels. There would be no impact to these parcels from the perspective of the Federal Government if the exchange does not take place.

There would be no Visual Resource Management impact to the proposed exchange or acquisition parcels.

7.6 Socioeconomics

7.6.1 Affected Environment

All of the selected federal parcels except for 201 acres of two parcels and the offered non-federal Emerald Mountain parcel are within Routt County. The main population centers of the County include the communities of Clark, Hahns Peak, Milner, Phippsburg, and Toponas; the towns of Oak Creek, Yampa and Hayden; and the city of Steamboat Springs. In 2000, the census reported 19,690 full time residents in the County, most located in or near Steamboat Springs. The service sector, which includes tourism related employment, provides most jobs in the County followed by wholesale and retail trade, and construction (Table 7.6-1).

7.6.1.1 Selected Federal Parcels

The 127 selected federal parcels with a total area of 15,528 acres generate revenue for the County and for the BLM. Each year, the federal Department of Interior makes payments to counties on the basis of federally owned acres in the counties. The Payment-in-Lieu-of-Taxes, or PILT, program is administered by BLM. The amount of the PILT payment is calculated using a formula that multiplies the total federal acreage in the county by a per-acre payment rate, less prior year federal mineral lease and forest payments. Then the calculated county payment is reduced by a pro-ration percentage to reflect the fact that Congress does not appropriate sufficient funds to make the entire amount of payment calculated.

In fiscal year 2004, the PILT payment to Routt Count was $2.06 per acre of federal land (including land managed by other federal land management agencies such as the U.S. Forest Service). That year, the total federal acreage in the County was 665,854 acres. Following the adjustments described in the paragraph above, Routt County received a PILT payment of $462,772, or about $0.695/acre. Thus, for fiscal year 2004, the 15,528 acres of selected federal parcels generated $10,792 of revenue for Routt County.

7.6.1.2 Offered Non-Federal Parcel

The SLB is not a taxable entity so the offered Emerald Mountain parcel does not currently generate revenue for Routt County. The SLB currently receives $6.50 per acre in grazing and recreation fees associated with Emerald Mountain for a total estimated annual revenue of $38,724.

7.6.2 Environmental Consequences

PILT Payment. Assuming the 2004 adjusted PILT payment of $0.695/acre, the land exchange would result in Routt County losing $10,792 of PILT payment from the selected federal parcels, and gaining $3,060 in PILT payment for the 4,404 acre Emerald Mountain parcel. Thus, the net effect of the land exchange would be a $7,732 reduction in PILT payment by the federal government to Routt County.

Property Tax. Conveyance of the 15,528 acres of selected federal land to private ownership would increase Routt County tax revenue. In Routt County, agricultural land must be in production for three years before the County would classify it as ‘agricultural’. In this case, the federal lands leased by BLM for grazing would likely be granted agricultural status, as would

federal lands being acquired by the participants. Using the current assessed value of the federal lands and the fiscal year 2004 mill levies specific to each parcel, Routt County tax revenue would increase by approximately $25,000 for the 127 selected federal parcels.

Grazing Fee. The BLM would no longer receive the yearly grazing fee for the selected federal parcels but would receive grazing fees for leases on the offered non-federal parcel.

Management Costs. The proposed action would replace 127 parcels which are scattered throughout Routt County with one large, contiguous and easily accessible parcel. This would result in lowered management costs and improved management efficiency. BLM parcels isolated by private land are more difficult to access because they require additional time for BLM staff visit and to gain access permission, often from multiple land owners. By consolidating BLM land ownership on the Emerald Mountain parcel, BLM staff can devote this additional time to monitoring and management. In addition, administrative costs associated with maintaining landline boundaries and corners, special-uses, title claims, rights-of-way grants and easements, grazing allotments, and intermingled ownership livestock pastures would be reduced under the proposed action. By reducing management such as land health assessments of the 127 scattered parcels to one parcel the BLM staff would reduce workload and travel expenses in management of public lands within Routt County.

7.6.3 No Action Alternative

Under the No Action Alternative, the economics of PILT payments, property taxes, and grazing fees would not be changed.

7.7 Soils

The soil information presented below for the selected federal parcels and the offered non-federal parcel was obtained from preliminary soil mapping in Routt County conducted by the National Resource Conservation Service.

7.7.1 Affected Environments

7.7.1.1 Selected Federal Parcels

Soils on the selected federal parcels formed primarily in colluvium and residuum derived from sandstone or shale; however, a few soils formed in mixed alluvium or in colluvium and residuum derived from metamorphic and igneous rocks. The soils occupy hills, terraces, plateaus, mountain slopes and ridges, alluvial fans and narrow alluvial valleys, and they formed under shrublands, aspen forest, and coniferous forests. They are generally very deep, but shallow soils occur on some backslopes and mountain slopes. Most of the soils are well drained except those occurring on river and creek floodplains and marshes; these soils are somewhat poorly to very poorly drained, and are saturated with water for a significant period during the growing season. The soils have a fine-loamy to fine texture, have very slow to moderately rapid permeability, and have a low to high water holding capacity.

Due to the wide range in elevation (6,286 to 9,360 feet), the climate the soils formed in is highly variable. The average annual precipitation ranges from about 14 inches at the lower elevations to 30 inches at the higher elevations. The soils formed in either a cryic or frigid temperature regime. Soils in a cryic temperature regime, those at higher elevations, have a mean annual soil temperature lower than 47 degrees F at 20 inches below the surface. Soils in a frigid temperature regime are warmer in summer than a soil with a cryic regime, but its mean annual temperature is lower than 47 degrees F. The higher elevations have about 30 to 50 frost free days, and the lowest elevations have up to 90 frost free days.

The soil series descriptions obtained from the NRCS's preliminary soil mapping included few soil taxonomic classifications, so for this report, the soils were classified using *Keys to Soil Taxonomy* (USDA-Soil Survey Staff, 1999) and were based on soil series descriptions. The

dominant soils occupying the higher elevations are probably Argicryolls, Haplocryolls, Haplocryalfs, Cryepts, and Cryorthents. Argicryolls and Haplocryolls are soils with a relatively thick, dark organic-rich surface layer. Haplocryalfs are soils with a significant amount of clay accumulation in the subsoil. Cryepts are immature soils with weak development, and Cryorthents are recently formed soils with little or no evidence of development due to erosion or recent deposition. The Cryorthents commonly are shallow to bedrock, rocky and occur with rock outcrops.

Soils occupying the lower elevations are warmer and include Argiustolls, Haplustolls, Haplustalfs, Ustepts, and Ustorthents. Argiustolls and Haplustolls are soils with a relatively thick, dark organic-rich surface layer. Haplustalfs are soils with a significant amount of clay accumulation in the subsoil. Ustepts are immature soils with weak development. Ustorthents are recently formed soils with little or no evidence of development and are commonly shallow to bedrock, rocky and occur with rock outcrops.

The dominant soils occupying floodplains and marshes are Aquents and Aquolls. These soils are saturated with water for a significant period during the growing season.

Land capability classification is a national interpretive soil grouping made for agricultural purposes with a rating from Class I, being the most suitable for agriculture, to Class VIII (USDA-SCS, 1973). The dominant soils occurring in the selected federal land parcels belong to Classes IV through VIII. Soils in Class IV have very severe limitations that restrict the choice of plants, require very careful management, or both. Soils in Class VIII have limitations that preclude their use for commercial plant production and restrict their use to recreation, wildlife, or water supply.

7.7.1.2 Offered Non-Federal Parcel

Soils on the offered non-federal parcel formed primarily in colluvium and residuum derived from sandstone or shale; however, a few soils formed in mixed alluvium or in colluvium and residuum derived from metamorphic and igneous rocks. The soils occupy hills, terraces, plateaus, mountain slopes and ridges, alluvial fans and narrow alluvial valleys, and they formed under shrublands, aspen forest, and mixed coniferous forest. They are generally very deep, but shallow soils occur on some backslopes and mountain slopes. Most of the soils are well drained except those occurring on creek floodplains and marshes; these soils are somewhat poorly drained to very poorly drained and are saturated with water for a significant period during the growing season. The soils have a fine-loamy to fine texture, have very slow to moderately rapid permeability, and have a low to high water holding capacity.

The range in elevation of the offered non-federal parcel is 6,720 to 8,240 feet. The average annual precipitation ranges from about 16 inches at lower elevations to 30 inches at the higher elevations. The soils formed in predominately a cryic temperature regime. However, soils occupying the lower elevations may have formed in a warmer frigid temperature regime. Soils in a cryic temperature regime have a mean annual soil temperature lower than 47 degrees F at 20 inches below the surface. Soils in a frigid temperature regime are warmer in summer than a soil with a cryic regime, but its mean annual temperature is lower than 47 degrees F. Frost free days in this parcel of land are about 30 to 70 days.

The soil series descriptions obtained from the NRCS's preliminary soil mapping included few soil taxonomic classifications, so for this report, the soils were classified using *Keys to Soil Taxonomy* (USDA-Soil Survey Staff, 1999) and were based on soil series descriptions. The dominant soils on the offered non-federal parcel probably include Agricryolls, Haplocryolls, Haplocryalfs, Cryepts, and Cryorthents. Argicryolls and Haplocryolls are soils with a relatively thick, dark organic-rich surface layer. Haplocryalfs are soils with a significant amount of clay accumulation in the subsoil. Cryepts are immature soils with weak development, and Cryorthents are recently formed soils with little or no evidence of development and are commonly shallow, rocky and occur adjacent to rock outcrops.

The dominant soils occupying floodplains are Cryaquents and Cryaquolls. These soils are saturated with water for a significant period during the growing season.

Land capability classification is a national interpretive soil grouping made for agricultural purposes with a rating from Class I, being the most suitable for agriculture, to Class VIII (USDA-SCS, 1973). The dominant soils occurring in the land parcel belong to Classes IV through VII; however, soils of Class VIII may exist. Soils in Class IV have very severe limitations that restrict the choice of plants, require very careful management, or both. Soils in Class VII have very severe limitations that make them unsuitable to cultivation and that restrict their use largely to grazing, woodland or wildlife.

7.7.2 Environmental Consequences

The land exchange would most likely result in a reduction in costs to the BLM to manage, improve and protect the conditions of a single parcel rather then managing numerous isolated parcels.

The soils involved in the proposed exchange have a similar land capability classification. In general, if the future land use of a specific parcel is similar to its present use, the soils are in adequate condition to support that use. Changes in land use, however, would require additional evaluation to determine soil suitability for that use.

7.7.3 No Action Alternative

Under the No Action Alternative, the proposed land exchange would not occur and the soils would remain under existing ownership and management, and there would be no net loss of federal lands. There would also be no potential loss of organic soils. The higher costs to the BLM for managing numerous isolated parcels; however, would remain unchanged under this alternative.

7.8 Vegetation

7.8.1 Affected Environment

Please note, this section discusses upland vegetation. Wetlands and riparian habitat are discussed in Section 6.9.

7.8.1.1 Selected Federal Lands

The 127 selected federal parcels are characterized by numerous vegetation communities including grasslands, forblands, shrublands, woodlands, forests, and riparian and wetland habitats. These parcels range in elevation from a low of 6,286 feet at Parcel 91 to a high of 9,360 feet at Parcel 131, and range in size from 1.93 acres to 1,070.78 acres. The vegetation types on the selected federal parcels are described below from field observation.

<u>Agricultural Grasslands.</u> Dryland agricultural communities occur sporadically on the selected federal parcels, generally adjacent to larger private tracts of land under the same management practices. These communities are dominated by introduced pasture grasses such as smooth brome *(Bromus inermis)*, timothy, intermediate wheatgrass *(Thinopyrum intermedium)*, Kentucky bluegrass *(Poa pratensis)*, crested wheatgrass *(Agropyron cristatum)* and orchard grass *(Dactylis glomerata)*. Native shrubs, forbs and grasses may also occur, including silver sagebrush *(Artemisia cana)*, rubber rabbitbrush *(Chrysothamnus nauseosus)*, western wheatgrass *(Pascopyrum smithii)* and yarrow *(Achillea lanulosa)*. Weeds such as tarweed, Canada thistle and houndstongue are often present due to disturbances associated with livestock grazing. Please note, the exact species composition of these areas varies depending on the species seeded.

In addition, there are flood irrigated agricultural grasslands which are comprised of similar species, but may also include some hydrophytic plants such as meadow foxtail *(Alopecurus*

pratensis), redtop, meadow barley, and various rushes and sedges. In general, these flood irrigated hay meadows are uncommon on the selected federal parcels and only occur adjacent to hay meadows located on private land.

Mixed Native Grassland. Mixed native grasslands occur at a range of elevations within the project area. They are generally dominated by native grasses including Letterman needlegrass *(Stipa lettermanii)*, Nelson needlegrass *(Stipa nelsonii)*, fringed brome *(Bromopsis canadensis)*, and western wheatgrass, as well as a variety of native forbs including yarrow, yampa and mule's ears *(Wyethia amplexicaulis)*. In addition, agricultural species such as Kentucky bluegrass and timothy frequently occur in the native grasslands.

Forblands. *Mule's Ears (Wyethia amplexicaulis) Forbland.* Large areas dominated by mule's ears generally occur on the lower elevation parcels below 7,500 feet, and are characterized by mule's ears with a cover of at least 50-75%. Other common species include tapertip onion *(Allium acuminatum)*, yampa, yarrow, balsamroot *(Balsamorhiza sagittata)*, narrowleaf mountaintrumpet *(Collomia linearis),* and agricultural grasses such as Kentucky bluegrass and timothy. Scattered Gambel oak *(Quercus gambelii)* and big sagebrush *(Artemisia tridentata)* shrubs may also occur.

Nettleleaf Giant Hyssop (Agastache urticifolia) Forbland. This community is relatively uncommon on the selected federal parcels and generally occurs on higher elevation sites above 8,500 feet. The community is dominated by nettleleaf giant hyssop, but other native forbs and graminoids may occur such as mountain goldenbanner *(Thermopsis montana)*, butterweed groundsel *(Senecio serra)*, aspen fleabane *(Erigeron speciosus)*, showy goldeneye *(Heliomeris multiflora)*, western larkspur *(Delphinium occidentale)*, Eaton's thistle *(Cirsium eatonii)*, and blue wildrye. Shrubs are uncommon, but red elderberry and snowberry may occur. These forblands are generally surrounded by aspen forests or may occur along drainages

Sagebrush Shrublands. Sagebrush shrublands are one of the dominant vegetation types of the selected federal parcels. The woody and herbaceous components of these shrublands are variable; they support a wide variety of herbaceous plants, and there are several sagebrush species in the overstory. Three different sagebrush communities were identified on the selected federal parcels: low sagebrush shrublands, silver sagebrush shrublands, and big sagebrush shrublands. Each community is described below.

Low Sagebrush (Artemisia arbusculum) Shrubland. The low sagebrush shrublands typically occur on shallow, rocky, poorly drained clay soils on a variety of landforms below about 7,500 feet. Poor drainage often leads to perched water tables in the spring, which may control the patchy distribution of vegetation within this community. Common associates include graminoids such as Junegrass *(Koeleria macrantha)*, western wheatgrass, squirreltail *(Elymus elymoides)*, and Kentucky bluegrass; and forbs such as tapertip onion, Drummond rockcress *(Boechera drummondii)*, sticky gumweed *(Grindelia squarrosa)*, yarrow, balsamroot, ballhead sandwort *(Eremogone congesta)*, Heyden's milkvetch *(Astragalus haydenianus)*, desert parsley *(Lomatium bicolor* var. *leptocarpum)*, and annual willowherb *(Epilobium brachycarpum)*. Occasionally shrubs of mountain big sagebrush *(Artemisia tridentata* var. *vaseyanum)* or serviceberry occur where soils are better developed.

Silver Sagebrush (Artemisia cana) Shrubland. The silver sagebrush shrublands generally occur on stream and river terraces, along ephemeral and perennial drainages, or on upland areas with sandy soils. This community varies in silver sagebrush density and supports a variety of graminoids and forbs. Some of the most common include mountain brome *(Bromus carinatus)*, Kentucky bluegrass, timothy, smooth brome, and Letterman needlegrass; most of these species are agricultural in origin and are indicative of heavy livestock use. Common native forbs include western larkspur, yarrow, yampa, aspen fleabane, beautiful cinquefoil

(Potentilla pulcherrima), sulphur buckwheat *(Eriogonum subalpinum)*, and showy goldeneye. Rubber rabbitbrush, shrubby cinquefoil, and chokecherry are often present as well.

Big Sagebrush (Artemisia tridentata) Shrubland. Big sagebrush shrublands occur frequently on the selected federal parcels and are composed of three different varieties of big sagebrush: basin big sagebrush, *(Artemisia tridentata var. tridentata)*, mountain big sagebrush and Wyoming big sagebrush *(Artemisia tridentata var. wyomingensis)*. The most abundant stands are composed primarily of basin and mountain big sagebrush reaching three to four feet in height. This community occurs on well-drained alluvial bottomlands where soils are deep, fine to medium textured, and have some source of sub-irrigation during the summer season. However, they may also occur on moderately deep upland soils with ample moisture storage. The distribution of these two sub-species in this community is not well understood, however basin big sagebrush appears to prefer deeper, better developed soils than mountain big sagebrush. Other common shrubs in this community include snowberry, green rabbitbrush *(Chrysothamnus viscidiflorus)*, and rubber rabbitbrush. Chokecherry, serviceberry, and Gambel oak are occasional or occur in transitional areas. Common forbs and graminoids include tapertip onion, nettleleaf giant hyssop, American vetch *(Vicia americana)*, Indian paintbrush *(Castilleja miniata)*, tailcup lupine *(Lupinus caudatus)*, yampa, white sage *(Artemisia ludoviciana)*, yarrow, harebell *(Campanula rotundifolia)*, Oregon grape *(Mahonia repens)*, Letterman needlegrass, Nelson needlegrass, and giant wildrye *(Leymus cinereus)*. Western wheatgrass is prevalent as well and is often concentrated in drainage swales. In areas with heavy livestock use, agricultural species and weeds such as Kentucky bluegrass, crested wheatgrass, timothy, black medic *(Medicago lupulina)*, Canada thistle, and tarweed also occur.

Shrublands dominated by Wyoming big sagebrush are infrequent in the study area, and tend to occur in the northern parcels, especially those along the Little Snake River. This community occurs on flat to steeply sloping southerly sites. This variety of big sagebrush tends to grow two to three feet tall and often co-occurs with bitterbrush *(Purshia tridentata)*. Other shrubs may include green rabbitbrush, mountain mahogany *(Cercocarpus montanus)*, and snowberry. Common graminoids include bluebunch wheatgrass *(Pseudoroegneria spicata)*, letterman needlegrass, western wheatgrass, squirreltail, and Kentucky bluegrass. Common forbs may include yarrow, tapertip onion, smallleaf pussytoes *(Antennaria parviflora)*, subalpine buckwheat, hairy golden aster *(Heterotheca villosa)*, tailcup lupine, James' nailwort *(Paronychia jamesii)*, and yampa.

Where Wyoming, basin, and mountain big sagebrush ranges overlap, Wyoming big sagebrush tends to grow on shallowest, most well-drained, and warmest soils relative to the other two subspecies. Basin big sagebrush tends to occupy the deepest, most fertile soils, and mountain big sagebrush tends to occupy moderately deep soils that are wetter and cooler than those occupied by Wyoming big sagebrush (http://www.fs.fed.us/database/feis/plants/shrub/). Please note, numerous difficulties arise when distinguishing between basin, mountain, and Wyoming big sagebrush and numerous authors believe that they can only be reliably separated based on molecular means (e.g., Weber and Wittmann, 2001).

Oak *(Quercus gambelii)* Shrubland. Oak shrublands are dominated by Gambel oak which forms moderately dense to dense stands 10 to 15 feet high. The stands range from dense thickets with little understory to relatively mesic mixed-shrublands with a rich understory of shrubs, grasses, and forbs. These clonal stands often have a patchy distribution and include species such as serviceberry, big sagebrush, snowberry, chokecherry, Woods' rose, and less commonly green rabbitbrush. Common graminoids in the understory may include blue wildrye, fringed brome, Junegrass, letterman needlegrass, and elk sedge *(Carex geyeri)*. The diversity of forbs in this community includes horsemint *(Monarda fistulosa)*, yampa, Eaton's thistle, tapertip onion, nettleleaf giant hyssop, Fendler meadowrue, yarrow, western sweet cicely *(Osmorhiza occidentalis)*, tailcup lupine, aspen daisy *(Erigeron speciosus)*, and little sunflower *(Helianthella quinquenervis)*. As in the other communities, agricultural species and weeds are more prevalent where livestock grazing is more intense.

Serviceberry *(Amelanchier alnifolia)* Shrubland. Serviceberry shrublands generally occur in mesic settings such as on north-facing slopes or along drainages, however they may also occur on other aspects depending upon elevation. Common shrub associates in the serviceberry shrublands include snowberry, chokecherry, Gambel oak, Woods' rose, green rabbitbrush, and big sagebrush. Scattered aspen may also be present, especially in transitional areas. Where the serviceberry forms dense thickets, the depauperate understory may include Oregon grape and gooseberry *(Ribes sp.)*, but where the shrub density is lower, numerous graminoids may occur including crested wheatgrass, Kentucky bluegrass, smooth brome, and giant wild rye. Common forbs in these areas include nettleleaf giant hyssop, northern bedstraw, silvery lupine *(Lupinus argenteus)*, yampa, Fendler meadowrue, and American vetch. Along ephemeral drainages, chokecherries often form dense stands and more mesic forbs such as stinging nettle may be found. Serviceberry shrublands often form mosaics with Gambel oak shrublands, snowberry shrublands, and aspen forests at higher elevations.

Snowberry *(Symphoricarpos rotundifolius)* Shrubland. Snowberry shrublands occur in more mesic situations than big sagebrush shrublands, and often in slightly drier soils at the periphery of silver sagebrush shrublands. Common associates in these communities include big sagebrush, silver sagebrush, serviceberry, and chokecherry. Forbs include western larkspur, nettleleaf giant hyssop, field sagewort *(Oligosporus pacificus)*, yarrow, tailcup lupine, aspen fleabane, and yampa. Less common species include subalpine buckwheat, showy goldeneye, wild blue flax *(Adenolinum lewisii)*, and harebell.

Juniper *(Juniperus scopulorum)* Woodland. Juniper woodlands occur on steep, west-facing slopes in the southern portion of the study area, near Yampa, Colorado, at an approximate elevation of 8,000 feet. Rocky Mountain juniper forms an open canopy layer above a moderately dense layer of mountain big sagebrush. Less common shrubs include green rabbitbrush, bitterbrush, Woods' rose, and snowberry. The well developed herbaceous understory includes the natives elk sedge, junegrass, bluebunch wheatgrass, western wheatgrass, and letterman needlegrass; and the non-native Kentucky bluegrass. Common forbs include fringed sage *(Artemisia frigida)*, Oregon grape, pussytoes *(Antennaria sp.)*, and wild buckwheat *(Eriogonum umbellatum)*.

Aspen *(Populus tremuloides)* Forest. Aspen forests occur throughout the selected federal parcels, however they are best developed on the higher elevation parcels, generally over 8,000 feet. Several different aspen forest types were observed including aspen/bracken fern, aspen/snowberry, aspen/serviceberry, and aspen/mixed herbaceous communities which are described below.

Aspen/Bracken Fern. Aspen forests with a dense understory of bracken fern *(Pteridium aquilinum)* occur on moist hillsides, drainages, and on poorly drained sites. Widely scattered serviceberry, chokecherry, Woods' rose, and snowberry occur in the shrub layer, often near gaps in the aspen canopy. At higher elevations, mountain maple and juvenile subalpine fir *(Abies bifolia)* may occur in the understory. Thick growth of bracken fern is the dominant feature of the understory, and where the density of bracken is reduced, a variety of native graminoids and forbs occurs. The pasture grasses timothy and Kentucky bluegrass are common in this community. The natives letterman needlegrass, blue wildrye, and elk sedge are generally less abundant. Common native forbs include nettleleaf giant hyssop, yampa, northern bedstraw *(Galium septentrionale)*, goldenglow, false hellebore, Fendler meadowrue, Geyer's larkspur, and stinging nettle. In wetter areas, bluejoint reedgrass, monkshood, and chiming bells also occur. The noxious weed houndstongue, the weedy annual tarweed, and the pasture grasses timothy and Kentucky bluegrass are abundant in communities most heavily used for livestock grazing. In some areas, there may be large gaps in the aspen overstory with extensive, dense stands of bracken fern and few woody species.

Aspen/Snowberry. On drier sites, generally on south and southwest-facing slopes, stands of aspen are characterized by a shrubby understory dominated by snowberry. Other important shrubs in this community include serviceberry, big sagebrush, Woods' rose, chokecherry, and less commonly, mountain maple. The herbaceous understory is a diverse mixture of graminoids and forbs. Common native graminoids include blue wildrye, fringed brome, and spiked false oat *(Trisetum spicatum)*. Common forbs include nettleleaf giant hyssop, goldenglow, yarrow, silvery lupine, western sweet cicely, showy goldeneye, American vetch, columbine *(Aquilegia coerulea)*, harebell, aspen fleabane, yampa, Geyer's larkspur, butterweed groundsel, and field sagewort. The introduced pasture grasses timothy and Kentucky bluegrass are abundant in many areas subject to livestock grazing.

Aspen/Serviceberry. The aspen/serviceberry community occurs in more mesic situations than aspen/snowberry, but generally supports similar herbaceous species. The distinguishing character is a dominance of serviceberry in the understory which may reach ten to twelve feet in height. The herbaceous layer commonly includes blue wildrye, fringed brome, little sunflower, yampa, yarrow, American vetch, strawberry *(Fragaria virginiana)*, nettleleaf giant hyssop, nettle, bedstraw, and Woods' rose. Other shrubs that may be present include big sagebrush, snowberry, and chokecherry. In general, the aspen/serviceberry community is less common than the aspen/snowberry community.

Aspen/Mixed Herbaceous. Aspen forests with an herbaceous understory are common on the selected federal parcels, especially at higher elevations. In these areas, the understory composition varies with slope and aspect. For example, in drainage swales, where soil moisture is higher the aspen are generally 45 to 50 feet tall and have diameters at breast height (dbh) of 12 to 16 inches. Cow parsnip, monkshood, false hellebore, butterweed groundsel, baneberry *(Actaea rubra subsp. arguta)*, threeflowered bedstraw *(Galium triflorum)*, Geyer's larkspur, lovage *(Ligusticum porteri)*, bluntseed sweet cicely, white globemallow *(Sidalcea candida)*, blue wildrye, and goldenglow are the most common understory species. On north-facing slopes, the understory is more sparse and supports shade tolerant plants such as Oregon grape and elk sedge as well as regenerating subalpine fir, Douglas-fir *(Pseudotsuga menziesii)*, or mountain maple. On south-facing slopes, aspen are generally smaller, perhaps 20 to 30 feet tall and 6 to 8 inches in diameter. The understory in the lower elevation sites is composed of mule's ears, aspen fleabane, and hairy golden aster. However, at the higher elevation south-facing sites the herbaceous understory often includes nettleleaf giant hyssop, western larkspur, showy goldeneye, silvery lupine, aspen fleabane, yarrow, yampa, American vetch, Woods' rose, heartleaf arnica, alpine timothy, and blue wildrye.

<u>Lodgepole Pine *(Pinus contorta ssp. latifolia)* Forest.</u> In general, the lodgepole pine forests on the selected federal parcels were not extensive and contained trees about 40 feet tall and with a dbh of 8 to 12 inches. The understory of the lodgepole pine forests is relatively sparse and includes elk sedge, fringed brome, purple reedgrass *(Calamagrostis purpurascens)*, heartleaf arnica, mountain goldenbanner, American vetch, blueberry *(Vaccinium myrtillus* ssp. *oreophilum)*, Woods' rose, and coralroot orchid *(Corallorhiza sp.)*. Less common are sulfur Indian paintbrush *(Castilleja sulphurea)*, blue wildrye, Eaton's thistle, and silvery lupine. In addition, scattered shrubs occur such as buffaloberry *(Shepherdia canadensis)* and common juniper *(Juniperus communis ssp. alpina)*. Those lodgepole pine forests at higher elevation sites (over 8,000 feet) often contain Engelmann spruce and subalpine fir, and those forests which had mechanical thinning often have a woodland character with a denser understory.

<u>Subalpine Fir *(Abies bifolia)* Forest.</u> Subalpine fir forests often occur on north-facing slopes in the middle to higher elevations of the study area (7,500 to 8,500 feet). They may also flank drainages, where the trees are commonly 12 to 16 inches in diameter. In general, the subalpine fir stands observed on the selected federal parcels form a dense, closed canopy. Common conifer associates may include Engelmann spruce, Douglas-fir, lodgepole pine, and blue spruce, but these are generally less common. The understory typically contains blue wildrye, bluntseed sweet cicely, Fendler meadowrue, Oregon grape, heartleaf arnica,

Engelmann's aster *(Eucephalus engelmannii),* and the occasional bush honeysuckle and red elderberry. These subalpine fir forests were often observed to intergrade into the aspen/bracken fern community, because the selected federal parcels are at the lower elevational limits of this vegetation type.

Mixed Coniferous Forest. In the southern portion of the project area, near Yampa, Colorado, mixed coniferous stands occur on north to northwest slopes between 8,000 to 8,300 feet. Widely spaced, mature ponderosa pine *(Pinus ponderosa)* occur within a canopy of Engelmann spruce and widely scattered aspen. The shrub layer is poorly developed in most areas, however where there are openings in the canopy Woods' rose and snowberry are common. More densely shaded areas have a sparse herbaceous cover that includes Oregon grape, mountainlover *(Paxistima myrsinites)*, elk sedge and northern bedstraw.

7.8.1.2 Offered Non-Federal Parcel

The vegetation types of Emerald Mountain include agricultural grassland, sagebrush shrubland, oak shrubland, serviceberry shrubland, snowberry shrubland, aspen forest, lodgepole pine forest, subalpine fir forest, and wetland and riparian habitats. Each type is described below.

Sagebrush Shrublands. Emerald Mountain has two sagebrush shrubland types: silver sagebrush *(Artemesia cana)* and big sagebrush *(Artemesia tridentata)*. The low sagebrush *(Artemesia arbusculum)* shrublands identified on the selected federal parcels were not observed on Emerald Mountain.

Silver Sagebrush (Artemesia cana) Shrubland. The silver sagebrush shrublands generally occur along the major ephemeral drainages of Emerald Mountain. The density of silver sagebrush varies with grazing intensity, and this vegetation type supports a variety of graminoids and forbs. Some of the most common include Kentucky bluegrass, timothy, and smooth brome, which are agricultural in origin and are indicative of heavy livestock use. Common native forbs include goldenglow, yarrow, yampa, aspen fleabane, and beautiful cinquefoil. Rubber rabbitbrush, shrubby cinquefoil, and chokecherry are often present as well. Portions of these shrublands have been entirely eradicated by overgrazing and are instead dominated by weeds, such as Canada thistle, tarweed, and houndstongue. Snowberry is a common co-dominant in this community.

Big Sagebrush (Artemesia tridentata) Shrubland. Big sagebrush shrublands also occur along the drainages of Emerald Mountain or on higher south-facing ridges and are primarily composed of mountain big sagebrush. The big sagebrush shrublands generally occur in higher topographic positions above the silver sagebrush shrublands where soil moisture is reduced. Snowberry commonly occurs in this community, however green rabbitbrush and rubber rabbitbrush may also be present. Chokecherry, serviceberry and Gambel oak are occasional or occur in transitional areas.

Common forbs and graminoids include tapertip onion, nettleleaf giant hyssop, American vetch, Indian paintbrush, tailcup lupine, yampa, white sage, yarrow, harebell, Oregon grape, and letterman needlegrass. Western wheatgrass is prevalent in drainage swales. Areas with heavy livestock use include agricultural species and weeds such as Kentucky bluegrass, crested wheatgrass, timothy, and smooth brome; weeds include Canada thistle, tarweed, and houndstongue.

Oak *(Quercus gambelii)* Shrubland. Oak shrublands occur on most of the steep south-facing slopes of Emerald Mountain. They are dominated by Gambel oak which forms moderately dense to dense stands up to 10 to 15 feet high. The stands range from dense thickets with little understory to relatively mesic mixed-shrublands with a rich understory of shrubs, grasses, and forbs. These clonal stands often have a patchy distribution and include species such as serviceberry, big sagebrush, snowberry, chokecherry, and Woods' rose.

Common graminoids in the understory may include blue wildrye, fringed brome, Junegrass, letterman needlegrass, and elk sedge. The forbs Oregon grape, horsemint, yampa, Eaton's thistle, tapertip onion, nettleleaf giant hyssop, Fendler meadow rue, yarrow, western sweet cicely, tailcup lupine, aspen daisy, and little sunflower are also common. As in the other communities, agricultural species and weeds are more prevalent where livestock grazing is more intense.

Serviceberry *(Amelanchier alnifolia)* Shrubland. The serviceberry shrubland forms a mosaic with the oak shrublands on Emerald Mountain. These shrublands contain serviceberry eight to ten feet high with an understory similar to that of the oak shrublands. Snowberry, Gambel oak, chokecherry, Wood's rose, and big sagebrush are common shrub associates.

Snowberry *(Symphoricarpos rotundifolius)* Shrubland. The snowberry shrublands generally occur adjacent to or intermixed with the sagebrush shrublands of Emerald Mountain. Often heavily grazed, these shrublands include numerous pasture grasses and weeds. In one area, bracken fern co-dominates.

Aspen *(Populus tremuloides)* Forest. Aspen forests are common on Emerald Mountain occurring over a variety of aspects and slopes, however they are best developed on the higher elevations of the site and are often intermixed with subalpine fir. Several different aspen forest types were observed including aspen/bracken fern, aspen/snowberry, aspen/serviceberry, and aspen/mixed herbaceous communities which are described below. Please note, in addition to the native species which dominate these communities agricultural grasses and weeds are prevalent in those areas which receive heavy use by livestock. These commonly include the noxious weed houndstongue, the weedy annual tarweed, and the pasture grasses timothy and Kentucky bluegrass.

Aspen/Bracken Fern. Aspen forests with a dense understory of bracken fern occur on moist hillsides, drainages, and on poorly drained sites. Widely scattered serviceberry, chokecherry, Woods' rose, and snowberry occur in the shrub layer, often near gaps in the aspen canopy. At higher elevations, mountain maple and juvenile subalpine fir may occur in the understory. Thick growth of bracken fern is the dominant feature of the understory; where the density of bracken is reduced, a variety of native graminoids and forbs occur. These include graminoids such as letterman needlegrass, alpine timothy, blue wildrye, and elk sedge. Common native forbs include nettleleaf giant hyssop, yampa, northern bedstraw, goldenglow, false hellebore, Fendler meadowrue, Geyer's larkspur, and stinging nettle. In wetter areas, bluejoint reedgrass and monkshood also occur. Please note, in some areas particularly along one of the ephemeral drainages east of Cow Creek, the aspen density is reduced and there are large stands of bracken fern without trees.

Aspen/Snowberry. On drier sites, generally on south and southwest-facing slopes, stands of aspen are characterized by a shrubby understory dominated by snowberry. Other important shrubs in this community include serviceberry, mountain big sagebrush, Woods' rose, and chokecherry. The herbaceous understory is a diverse mixture of graminoids and forbs. Common native graminoids include blue wildrye, fringed brome, and spiked false oat. Common forbs include nettleleaf giant hyssop, yarrow, silvery lupine, western sweet cicely, showy goldeneye, American vetch, harebell, aspen fleabane, yampa, and Geyer's larkspur.

Aspen/Serviceberry. The aspen/serviceberry community occurs in more mesic situations than aspen/snowberry, but it generally supports a similar composition of herbaceous species. The distinguishing character is a dominance of serviceberry in the understory which may reach ten to twelve feet in height. The herbaceous layer commonly includes blue wildrye, fringed brome, little sunflower, yampa, yarrow, American vetch, strawberry, nettleleaf giant hyssop, nettle, bedstraw, and Woods' rose. Big sagebrush, snowberry, and chokecherry are other shrubs that

may occur as well. In general, the aspen/serviceberry is not as common as the aspen/snowberry community.

Aspen/Mixed Herbaceous. Aspen forests with an herbaceous understory are common along the moist drainages of Emerald Mountain. The understory is mainly composed of blue wildrye, goldenglow, butterweed groundsel, baneberry, bluntseed sweet cicely, and Richardson's geranium *(Geranium richardsonii)*. In moister situations, cow parsnip, monkshood, false hellebore, American speedwell *(Veronica americana)*, and northern willowherb and may occur.

Lodgepole Pine *(Pinus contorta ssp. latifolia)* Forest. Lodgepole pine occurs infrequently on Emerald Mountain. These forests occur at the higher elevations often intermixed with aspen or subalpine fir. The stands observed contain sticky laurel *(Ceanothus velutinus)* as well as other common associates such as elk sedge, fringed brome, heartleaf arnica, mountain goldenbanner, American vetch, blueberry, *(Vaccinium myrtillus ssp. oreophilus)*, and Woods' rose.

Subalpine Fir *(Abies bifolia)* Forest. Subalpine fir forests occur on the cooler and moister north and east-facing slopes of Emerald Mountain and generally occur with aspen as a co-dominant. Some Engelmann spruce, blue spruce, and Douglas fir may occur in these forests as well. Ponderosa pine is infrequently present, but may occur on dry south-facing slopes. In subalpine fir stands, the understory is sparse with Oregon grape, bluntseed sweet cicely, bedstraw, Fendler meadowrue, blueberry, heartleaf arnica, and elk sedge predominating. In more open stands mixed with aspen, the understory is generally comprised of a thicker layer of herbaceous species including blue wild rye, bracken fern, bluntseed sweet cicely, and butterweed groundsel.

7.8.2 Environmental Consequences

The Proposed Action would result in the net loss of 11,124 acres of vegetation to the federal government. The vegetation types on the selected federal parcels and the offered non-federal parcel are similar. However, there are no mixed native grasslands, forblands, juniper woodlands, or mixed coniferous forests on Emerald Mountain. The vegetation types lost are all common and widespread within BLM holdings.

7.8.3 No Action Alternative

Under the No Action Alternative, land ownership would remain unchanged, the federal government would not lose 11,124 acres of vegetation and would not acquire the vegetation resources on the 4,404 acre Emerald Mountain Parcel. The BLM would retain management responsibility on the selected federal parcels. There is the possibility that the offered non-federal land would be sold and developed, resulting in a loss of vegetation.

7.9 Wildlife, Aquatic and Terrestrial

7.9.1 Affected Environment

Routt County and the 201 acres in Moffat County are within the Southern Rocky Mountain Steppe - Open Woodland - Coniferous Forest - Alpine Meadow Province [M331] (Bailey, 1995). This province covers about 102,300 square miles or 2.8 percent of the United States, and includes portions of Montana, Idaho, Wyoming, Utah, Colorado and New Mexico.

The selected federal parcels and the offered non-federal Emerald Mountain parcel encompass a wide variety of vegetation types (see Section 7.8) and elevations, which in turn provide habitat for a wide variety of wildlife species. No parcel has any unique land feature or special habitat such as caves, waterfalls or large cliffs. Routt County and the affected portion of Moffat County provide habitat for over 218 species of amphibians, reptiles, birds, and mammals (NDIS 2005). The more common and visible species include mule deer *(Odocoileus hemionus),* American elk *(Cervus elaphus),* pronghorn *(Antilocapra americana)*, black bear *(Ursus americanus)*, raptors, Canada goose *(Branta canadensis)*, waterfowl, coyote *(Canis latrans)*,

and red fox *(Vulpes vulpes)*. The less common or rare wildlife species in Routt County include moose *(Alces alces)*, white-tailed deer *(Odocoileus virginianus)*, northern goshawk *(Accipiter gentilis),* long-eared owl *(Asio otus)*, sage thrasher *(Oreoscoptes montanus)*, and smooth green snake *(Liochlorophis vernalis)*.

Due to biological and ecological differences, wildlife species utilize habitats differently, which results in variations in home range sizes among species. Large species such as elk, antelope, black bear, moose, and deer have large home ranges. Similarly, the larger bird species such as eagles, hawks, falcons, waterfowl, herons, sage grouse, and cranes have relatively large home ranges. The species most likely to have smaller home ranges, where a given parcel might provide enough suitable habitat to encompass a home range, include rodents, rabbits, foxes, reptiles, and some amphibians.

7.9.1.1 Selected Federal Parcels

The 127 selected federal parcels vary in size from 1.93 acres to 1,070.78 acres. Table 6.5-2 is a size class distribution for the selected federal parcels. Ninety-four of the 127 parcels are less than 98 acres in size. Most of the selected federal parcels are surrounded by landscapes with similar vegetation and habitat types. The general vicinity of a few selected federal parcels has low density developments. Some of the smaller parcels are not large enough to provide all essential habitat components to species requiring a large home range. However for some species, a parcel would be sufficient to provide habitat components necessary for that individual's survival. Larger species utilize all of a parcel, as well as surrounding private lands, for their home range.

This section discusses species of economic importance (i.e. large game species) to the economy of the local region. A review of species distribution maps for the project area (NDIS 2005) revealed that all parcels included in this land exchange provide overall range for many economically important species. Overall range is defined as "the area which encompasses all known seasonal activity areas within the observed range of that species" (NDIS 2005). Because of the scale at which these maps are created, lines showing distinct species distribution features should be taken as a general descriptor of a specific habitat use and not used as an absolute. Species discussed herein include black bear, American elk, mule deer, and pronghorn.

Most of the federal parcels are within black bear overall range, but none are in summer concentration areas. Approximately 24 of the parcels are identified as existing within habitat identified as human conflict areas. The transference of these parcels to private ownership would not impact the ability of black bears to move across the landscape or result in greater confrontation with humans. The land use of the habitats on these parcels is not expected to change after the change in ownership.

All of the federal parcels are classified as overall American elk range and summer range. Approximately 31 of the federal parcels are totally or partially within winter range, 37 are in severe winter range, and 11 are in winter concentration areas. Five of the selected federal parcels are within an elk migration corridor, and 22 are within production areas. Transfer of ownership would not negatively impact elk use of these parcels since land management is reasonably certain to occur as it is currently practiced.

All of the federal parcels are classified as overall mule deer range, and all but 24 are within summer range. Two parcels are totally within winter concentration areas, and six parcels are within severe winter range. Transfer of ownership would not negatively impact mule deer use of these parcels since land management is reasonably certain to occur as it is currently practiced.

Twenty-one selected federal parcels provide overall habitat for pronghorn. None of the parcels is located in severe winter range, concentration areas, winter concentration areas or winter range. Transfer of ownership would not negatively impact pronghorn in regards to the specific

usability of these parcels since land management is reasonably certain to occur as it is currently practiced.

Aquatic habitats within the federally owned parcels include stock ponds, beaver ponds, streams, and rivers. Table 6.2-1 identifies the 27 selected federal parcels that have segments of perennial streams and the 18 parcels that have ponds, and Section 6.2 describes these aquatic resources. Impacts to the resources are not expected to change from current conditions. Species diversity and abundance varies within these habitats and is influenced by water quality, temperature and the size of the water body. Within the stock ponds, species assemblages likely vary between ponds, as some ponds may dry-up seasonally or yearly. Most of these stock ponds do not have fish, but amphibians are capable of colonizing the ponds. Amphibians expected to occur at these stock ponds (from Hammerson 1999) include tiger salamanders *(Ambystoma tigrinum)*, western chorus frog *(Pseudacris triseriata),* and northern leopard frog *(Rana pipiens).* These amphibians are also likely to occur in the beaver ponds on the selected federal parcels. No aquatic reptiles, specifically turtles, are known to occur in Routt or Moffat Counties (Hammerson 1999). Beaver ponds, streams, and rivers found on the selected federal parcels are capable of supporting a wide assemblage of fish species. Economically important fish species expected to be present in these habitats include brook trout *(Salvelinus fontinalis),* rainbow trout *(Oncorhynchus mykiss),* and brown trout *(Salmo trutta).* Portions of the Little Snake River may hold the introduced predatory northern pike *(Esox lucius).* No rare or sensitive fish species are known to exist within any of the habitats present on the selected federal parcels.

7.9.1.2 Offered Non-Federal Parcel

The Emerald Mountain parcel is somewhat of an island in the broader Yampa River Valley. The vegetation types provide habitat similar to adjacent private lands, other federal lands and the larger landscape. The parcel has no unique land features that might provide special habitat such as caves, waterfalls or large cliffs.

The Emerald Mountain parcel is classified as overall habitat for black bear and does not have any human conflict areas or summer concentration areas. The entire parcel is classified as American elk winter range, and over half is classified as severe winter range and winter concentration areas. Nearly all of the parcel is mapped as an American elk production area. The entire parcel is mapped as mule deer summer range. This parcel does not provide habitat for pronghorn.

The aquatic habitats of the Emerald Mountain parcel include portions of a 18,558 foot long segment of the 5-10 foot wide Cow Creek, six stock ponds, and one beaver pond (Table 6.2-1). This parcel has aquatic habitats capable of supporting many of the same species as the selected federal parcels. No water bodies are present which are capable of providing habitat for northern pike. Cow Creek, the only perennial stream, is small and thus most likely dominated by brook trout. Amphibian occurrence is expected to be the same as the offered federal parcels.

7.9.2 Environmental Consequences

The direct effect of the Proposed Action is the change in land parcel ownership. Specifically, 127 parcels of land owned by the Federal government and managed by the BLM would be transferred to private ownership, and the Emerald Mountain parcel owned by the SLB would be transferred to federal ownership and managed by the BLM.

Indirect effects of the proposed land exchange are those secondary or subsequent actions that are reasonably certain to occur as a consequence of the land exchange. Six selected federal parcels (12, 13, 15, 78, 102, and 114) could potentially have some level of development in the future. These parcels are either located adjacent to an existing subdivision, are separated from an existing subdivision by lands owned by the exchange participant, or are located in close proximity to state parks or the town of Steamboat Springs. Four additional parcels meet the

above criteria (11, 50, 90, and 105) but are unlikely to be developed because the new landowner's stated intent is to place the parcels in a voluntary conservation easement or the parcels would have voluntary deed restrictions that would limit future development. Topographic and other development constraints are present for many of the land exchange parcels that reduce their likelihood of development. Regardless of their location, development of any of these parcels is not reasonably certain.

It is reasonable to assume that the remaining 121 selected federal parcels to be transferred to private ownership would remain in a ranching land use consistent with existing land uses, generally livestock grazing. Specifically, 95 of the remaining parcels would be transferred to one of the grazing lessees, and four would be transferred to the State Land Board. It is reasonably certain that the land use would not change because the surrounding lands are currently available for development and no development is occurring. Thus, private acquisition of the federal parcels is not likely to trigger development.

Impacts to aquatic resources are not expected to change from current conditions. Actions most likely to impact aquatic resources are sedimentation from livestock and runoff from exposed soils (i.e. roads) and localized eutrophication from livestock waste entering water bodies. All of these actions currently exist and transferring federal parcels to private ownership, often to individuals currently leasing grazing rights on these parcels, is not expected to cause an increase in such actions.

In summary, there are no anticipated changes to habitat suitability or availability on the selected federal parcels for aquatic and terrestrial wildlife in general. Similarly, there are no anticipated changes to habitat suitability or availability on the Emerald Mountain parcel for aquatic and terrestrial wildlife species. However, the habitats of the large, consolidated block of the Emerald Mountain parcel could be managed by the BLM to enhance wildlife values in accordance with applicable BLM regulations.

There are no anticipated cumulative effects to any of the aquatic and terrestrial wildlife species due to the proposed action, a change in land ownership. The land use on the selected federal parcels going to private ownership would likely remain the same. For most of these parcels the existing and post-exchange land use would likely be livestock grazing. There is some remote potential that some of the parcels could be developed. However, that is not reasonably certain, and any such development would be subject to county and federal regulations in some circumstances.

The change in ownership of the non-federal Emerald Mountain parcel to federal ownership would not have any cumulative effect to aquatic and terrestrial wildlife species considered, in that future actions on federal lands are subject to the National Environmental Policy Act and Endangered Species Act prior to action taking place.

7.9.3 No Action Alternative

Under the No Action Alternative, land ownership would not change. All selected federal parcels and the offered non-federal parcel would have the relative habitat suitability described in the Affected Environment section above. The potential aquatic and terrestrial wildlife species occurrences would remain unchanged. The selected federal parcels surrounded by private lands with no access would continue to be difficult for the BLM to manage. Wildlife habitat conditions would be subject to livestock grazing under existing permit standards. The Emerald Mountain parcel would continue to be managed by the SLB for their goals, or could be sold off to other entities, as is occurring elsewhere.

7.10 Paleontological Resources

7.10.1 Affected Environment

7.10.1.1 Selected Federal Parcels

The paleontological resource classification of the selected federal parcels varies depending upon the geologic formation or formations occurring on each parcel. In general, the geology of the 127 parcels involved in this land exchange ranges from pre-Cambrian age gneiss and schist of the Park Range to the late-Tertiary ages of the Wasatch and Brown's Park formations. Dispersed upon all formations are varying deposits of Quaternary formations such as alluvium, colluvium, land slide deposits, loess, and other unconsolidated materials. The paleontological classification applied to these formations varies from a Class IV of the pre-Cambrian rock and Quaternary deposits, to a classification of Ia attributed to several formations including the Brown's Park formation.

7.10.1.2 Offered Non-Federal Parcel

The two geologic formations at the surface on the Emerald Mountain parcel are the Cretaceous Age Mancos Shale Formation (Km) and the Tertiary age Browns Park Formation (Tbp). The Km formation is a gray to dark-gray marine shale. Sandstone beds occur near the top, and a calcareous sandstone of the Upper Cretaceous Frontier Member is 300 - 400 feet above the base, overlain by a calcareous shale zone equivalent to the Niobrara Formation. Silver-gray siliceous shale of the Lower Cretaceous Mowry Shale Member is at the base. The thickness is about 5,000 feet. This formation has been classified a Class II formation due to the potential for occurrence of scientifically significant fossils.

The Tbp formation is a white, light-gray, and tan, poorly to moderately consolidated, generally crossbedded, tuffaceous sandstone, subordinate conglomerate, siltstone, white crystal-poor rhyolitic air-fall tuff, and minor limestone. This formation is mostly of fluvial and eolian origin and is characterized by abundant volcanic clastic material. It may contain red, orange, and yellow beds with abundant clasts of the Uinta Mountain Group (Yu) and subordinate Paleozoic limestone, especially near the base. The Tbp formation has been deposited mostly north and east of the Uinta Mountains. Maximum thickness is highly variable but is considered to be a maximum of about 500 meters. This formation has been classified as a Class Ia formation for the potential occurrence of scientifically significant fossils (Armstrong & Wolney, 1989). The potential for discovery of significant fossils on this location is considered to be moderate to high. In consideration of this project, a Class Ia paleontological classification would be applied to the entire State Lands portion of the Emerald Mtn. Land Exchange.

7.10.2 Environmental Consequences

Given that the proposed action would transfer management of the Emerald Mountain parcel from the State of Colorado to the BLM, the environmental consequence as it applies to the paleontological resources shall be defined under a BLM managed situation. Since scientifically significant fossils can potentially be found abundantly within these two formations (Armstrong & Wolney, 1989), the potential for discovery of significant fossils within these two formations is considered to be high. If fossils are located here, any surface disturbing activities could damage the fossils and the information that could have been gained from them would be lost. The significance of this impact would depend upon the significance of the fossil. These actions would need review and evaluation prior to any authorizing decision. The land exchange's proposed action could constitute a beneficial impact to the paleontological resources of Emerald Mountain by increasing the chances for discovery of scientifically significant fossils and the information acquired therein that would not occur under present management conditions.

In the event that any fossils are located and discovered on the selected federal parcels being transferred to private ownership, any surface disturbing action following the transfer could damage the fossil finds and the information that might be gained from them could be lost. The

significance of this impact would depend upon the significance of the fossil. Conversely, it is also possible that transferring these lands to the private sector could result in activities that discover important fossil finds and subsequently result in the beneficial advancement of paleontological knowledge. Therefore, the proposed action could constitute a beneficial impact to paleontological resources by increasing the chance for discovery of scientifically significant fossils.

7.10.3 No-Action Alternative

Under the no-action alternative, paleontological resources on the selected federal parcels would remain under BLM management, and the BLM would not acquire the paleontological resources of the Emerald Mountain parcel. The Emerald Mountain parcel and its paleontological resources would continue to be managed by the State Land Board.

7.11 Standards for Public Land Health

7.11.1 Standard 1

Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes. Adequate soil infiltration and permeability allows for the accumulation of soil moisture necessary for optimal plant growth and vigor, and minimizes surface runoff.

Upland soils on the Selected Federal Parcels generally support diverse native plant communities representative of the physical site conditions, which are influenced by slope aspect, geology and steepness. No areas of accelerated erosion were found on the Selected Federal Parcels during the reconnaissance inventory conducted for this exchange.

Upland soils on the Emerald Mountain parcel are well covered by brush and forest and very little to no soil movement was observed on two different sites when an interdisciplinary team of resource specialists conducted a land health assessment on September 1, 2005.

The Emerald Mountain Land Exchange would meet the Upland Soil Standard for healthy public lands. Upland soils that are associated with the Emerald Mountain tract are very similar to soils found on the federal lands that would be disposed, with respect to Land Capability Classes. The contiguous block of federal lands that would result from this land exchange would be more suitable for managing the upland soil resource within a landscape or ecosystem setting.

The No Action Alternative would meet the Upland Soil Standard for healthy public lands. The condition of the upland soils on the Selected Federal Parcels would remain unchanged or would be expected to improve if changes to land use practices are warranted. Future management of the lands, including mineral development or right-of-way grants would be required to address the effects of the project on upland soil health.

7.11.2 Standard 2

Riparian systems associated with both running and standing water function properly and have the ability to recover from major disturbance such as fire, severe grazing, or 100-year floods. Riparian vegetation captures sediment, and provides forage, habitat, and biodiversity. Water quality is improved or maintained. Stable soils store and release water slowly.

The selected federal parcels contain more riparian resources than the Emerald Mountain parcel and nearly 80% of these individual systems are currently functioning properly. Some stream segments located on the selected federal parcels are very short and only account for a fraction of the total stream length. Issues with stream morphology, which may be causing problems with erosion or deposition, generally lead to ratings of functioning at risk. These are often a result of offsite problems, upstream or downstream of the land exchange parcels. If concentrated use by livestock is causing riparian functionality issues, the problem is

exasperated by the isolated nature of these selected federal parcels. Even with an emphasis for the last 20-years to document and assess the riparian/wetland systems on public lands, some of these isolated parcels had not been inventoried by BLM staff. Problems caused by livestock grazing require more than a onetime inventory that provides a snapshot of current or perceived conditions. It is costly to monitor these small isolated resources and effect changes on grazing permits without continued monitoring, including monitoring of trends. Therefore, many riparian/wetland functionality issues cannot be resolved on these isolated parcels, or it would be very costly to implement corrective actions.

In contrast to the Selected Federal Parcels, only about 29% of the individual systems within the Emerald Mountain parcel are rated as functioning properly. Cow Creek is the largest riparian system found on the Emerald Mountain parcel and it is the largest riparian system affected by the exchange.

An interdisciplinary team of resource specialists visited Cow Creek on September 1, 2005 to assess the current condition of the riparian resources. A little less than half of the total length of Cow Creek was assessed as the upstream reach. Approximately 1.5 miles of the upstream end of Cow Creek, in the southern portion of the Emerald Mountain parcel, has no evidence of recent livestock grazing. The streambank vegetation consists of willows and narrowleaf cottonwood with an understory of predominately upland grass species and forbs, including Canada thistle. One fence is located at the bottom of this assessed reach. The fenceline contrast that occurrs at this point shows impacts adversely affecting riparian health resulting from improper livestock management on the downstream side. Streambank instability due to substantial widening of the stream channel also present. The upstream reach is rated as functioning properly albeit on low end of this rating because much of the herbaceous streambank vegetation is predominately upland vegetation.

The lower half of the creek had numerous fences with scattered use by cattle and it would require some additional mapping and possibly more reach breaks established to follow restoration progress and determine future trends. Overall, Cow Creek was rated as functioning at risk.

The Emerald Mountain Land Exchange would meet the Riparian Standard for healthy public lands. The Selected Federal Parcels contain more riparian resources than the Emerald Mountain tract and nearly 80% of these individual systems are currently functioning properly. Conversely only about 29% of the individual systems within the Emerald Mountain tract are rated as functioning properly. However, acquiring Emerald Mountain would give the BLM a contiguous stream segment with surrounding uplands and connected tributary stream segments. Land use planning on this larger tract would result in impoved management for wildlife habitat and riparian/wetland habitat, and changes to livestock grazing practices would be made. These management changes would enhance the riparian resources located on the Emerald Mountain parcel and increase the overall functionality of these riparian/wetland systems.

Following the land exchange, the future condition of the riparian resources found on the selected federal parcels would likely remain unchanged. Some wetland systems on the parcels are inaccessible to livestock due to their position relative to other grazing lands and watering areas located on adjacent private lands. Many of these riparian/wetland systems are functioning properly, although some impacts from wildlife could be expected.

The Army Corps of Engineers would retain authority over jurisdictional riparian/wetland systems that would be transferred to private parties. If mineral development or other surface disturbing activities would have impacts in jurisdictional riparian/wetland systems, they would be subject to Corps review and permitting, and mitigation would be required. On 68 parcels, continued administration of the federal coal estate by the BLM would also maintain some authority to consider any impacts to riparian/wetland systems and require mitigation.

Although Emerald Mountain Land Exchange would result in a loss of federal ownership of scattered riparian/wetland habitat there have been other land exchanges which have resulted in acquiring substantial riparian/wetland habitats, most notably were two different exchanges that resulted in acquisition of the lower portion of Willow Creek, a perennial tributary to the upper Little Snake River.

The No Action Alternative would meet the Riparian Standard for healthy public lands. Riparian systems on the selected federal parcels were mostly found to be functioning properly. BLM would still be responsible for identifying, evaluating and monitoring all riparian systems. However, as described above, it is costly to monitor these small isolated resources and some of these isolated parcels had not been inventoried by BLM staff prior to the land exchange. Direct impacts to riparian systems would be avoided or minimized when processing land use authorizations. Riparian systems that are functioning at risk would be evaluated further to determine if management changes could positively affect the riparian soils, riparian plants or the hydrologic regime. Due to the isolated nature of the parcels, many riparian/wetland functionality issues cannot be resolved because they are often the result of offsite problems or it would be very costly to implement corrective actions.

7.11.3 Standard 3

Healthy productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential. Plants and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations and ecological processes.

Wildlife. Wildlife communities on many of the selected federal parcels have been assessed for this standard as part of grazing lease renewals. Most of these parcels have been found to meet the standard for productive wildlife communities. The parcels provide habitat for big game, small mammal, reptile, songbird, and raptor species. Some of the parcels also provide habitat for aquatic wildlife.

The Emerald Mountain Parcel was assessed for meeting the Colorado Standards for Public Land Health on September 1, 2005. The assessment found the vegetative community to be in good condition, providing productive habitat for a variety of wildlife species. In addition, these habitats occur in a variety of successional stages that are important for the varying life stages of many wildlife species. Emerald Mountain provides important habitat for big game, including winter and calving habitat for elk. The parcel also provides important habitat for small mammal, reptile, songbird and raptor species. Cow Creek and the seven ponds on Emerald Mountain provide habitat for aquatic wildlife.

The proposed action would exchange 127 scattered parcels totaling 15,528 acres for 4,404 consolidated acres on Emerald Mountain. Although the proposed action would result in a net loss of BLM managed wildlife habitat, it would improve the BLM's ability to effectively manage the habitat. The selected federal land parcels vary in size from 1.93 acres to 1,070 acres, with 94 parcels less than 98 acres in size. Most of these parcels are too small to meet the life requirements for many wildlife species and are difficult to manage. The proposed action would transfer a large, contiguous block of wildlife habitat to federal management, providing BLM the opportunity to effectively manage for many wildlife species. The proposed action would meet the standard for maintaining productive wildlife communities.

Under the no action alternative, the land exchange would not take place and the selected federal parcels would remain under BLM management. Each parcel would be assessed for meeting standards during grazing lease renewals on an individual basis.

Plants. Many, but not all, of the federal parcels involved in the Proposed Action have been assessed for this standard since 1996 as part of grazing lease renewals. The vast majority of these parcels have been found to meet this standard.

The assessment found that native plant communities on the Emerald Mountain parcel exhibit diversity and distribution appropriate for site conditions throughout the parcel. Healthy levels of plant reproduction, age class structure, and vigor were present at levels that sustain ecological process and resilience from human disturbance and natural climatic fluctuations. While the parcel currently meets this standard, it is not currently being managed for this standard.

Under the Proposed Action, the selected federal parcels would fall out of federal ownership and no longer be subject to this standard.

Under the No Action Alternative, the Selected Federal Parcels would continue to be subject to this standard. The BLM would continue to be required to take management actions to meet this standard where it is determined to not be met. Standards assessments would continue on the federal parcels in conjunction with grazing lease renewals and management to attain or maintain this standard would be handled on a case-by-case basis. The No Action Alternative would meet this standard for the federal parcels and would not apply for the non-federal parcel.

7.11.4 Standard 4

Special status, threatened and endangered species (federal and state), and other plants and animals officially designated by the BLM, and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.

Wildlife. Fourteen of the selected federal parcels provide 1,790 acres of potential habitat for lynx. Modeled lynx habitats of the Little Snake Field Office are on the periphery of the overall potential lynx habitat in Routt County. Many of the LSFO parcels are completely surrounded by private lands with no public access, are low in elevation, and are in landscapes that are predominately non-forest, non-habitat for lynx. Thus, the modeled potential habitats are unconsolidated, unmanageable, lack deep snow conditions, and are isolated from other potential habitats with higher suitability. Thirteen selected federal parcels having some potential for lynx habitat are within the Quaker Mountain LAU and one is in the Lower Elk River LAU. The thirteen parcels in the Quaker Mountain LAU have 1,687.42 acres of potential lynx habitat. These potential habitats are not contiguous with the Routt National Forest potential habitats, and are located at straight-line distances of 1 to 9 miles. The surrounding lands are characterized by a patchy landscape of conifer/aspen, mountain shrub, sagebrush, and agricultural lands. Many of these lands are fenced with barbed wire and sheep fence, which could make lynx movement difficult. Parcel 50 is within the Lower Elk River LAU and contains 103.16 acres of potential lynx habitat, and is contiguous with potential habitat in the Routt National Forest, with non-habitat to the west of the parcel.

Fifteen selected federal parcels have perennial aquatic habitats that could be potential habitat for the boreal toad, however no boreal toads were observed at any of these sites. All parcels with aquatic habitats are relatively low in elevation and generally lack the forest overstory vegetation to shade the water. This results in very warm air temperatures throughout the snow-free season and virtually eliminates the chances of successful reproduction. Additionally, livestock grazing on the selected federal parcels reduces the suitability for boreal toads due to increased water turbidity.

There are no offered federal parcels that are suitable habitat for yellow-billed cuckoo.

None of the selected federal parcels occur in mapped bald eagle winter concentration areas, however Parcels 50 and 51 and the Little Snake River near Parcel 2 have limited potential for individual bald eagle roosting. Roosting potential is judged “limited” due to the small patch-size and small size of the cottonwood habitats of Parcel 2, and northerly aspect and denseness of

the conifer habitats of Parcels 50 and 51. All three parcels are located near relatively busy county roads, which further reduce their suitability. None of the parcels is mapped as a concentrated bald eagle winter foraging area.

Five of the 15 BLM Sensitive Wildlife Species, including four birds and one reptile, are potentially present on the selected federal parcels and the offered non-federal parcel. These include northern goshawk, ferruginous hawk, sage grouse, Columbian sharp-tailed grouse, and midget faded rattlesnake. However, no BLM sensitive species were observed on any of the land exchange parcels during field reconnaissance.

Emerald Mountain provides 2,114 acres of habitat for the Canada lynx, a species listed as threatened under the Endangered Species Act. A visit to Emerald Mountain in the fall of 2005 showed the vegetative community to be in good health, providing suitable and productive habitat for Canada lynx. The Emerald Mountain parcel also provides habitat for five BLM sensitive wildlife species, Northern goshawk, Ferruginous hawk, Greater sage grouse, Columbian sharp-tailed grouse and midget faded rattlesnake. Habitat on Emerald Mountain is currently in good condition, providing suitable and productive habitat for BLM sensitive wildlife species.

The proposed action would meet the standard for threatened and endangered and special status wildlife species. Emerald Mountain provides 2,114 acres of habitat for the Canada lynx, a species listed as threatened under the Endangered Species Act, whereas fourteen of the selected federal parcels provide 1,790 acres of habitat for lynx. Thus, the land exchange would result in a net gain of 324 acres of lynx habitat.

Emerald Mountain also provides habitat for five BLM sensitive species, Northern goshawk, Ferruginous hawk, Greater sage grouse, Columbian sharp-tailed grouse and midget faded rattlesnake. Habitat on Emerald Mountain is currently in good condition, providing suitable and productive habitat for BLM sensitive species. The proposed action would transfer a large, contiguous block of wildlife habitat to federal management, providing BLM the opportunity to effectively manage for sensitive species.

Under the no action alternative, the land exchange would not take place and the selected federal parcels would remain under BLM management. Each parcel would be assessed for meeting standards during grazing lease renewals on an individual basis.

Plants. There are no federally listed threatened or endangered or BLM sensitive plant species present on any federal or non-federal lands included within the Proposed Action. The acquisition of the Emerald Mountain Parcel by the BLM would ensure that permitted uses be allowed only if they are able to maintain or improve conditions that meet this standard, therefore, the proposed action would meet this standard.

Under the no action alternative, the land exchange would not take place and the selected federal parcels would remain under BLM management. Each parcel would be assessed for meeting standards during grazing lease renewals on an individual basis.

7.11.5 Standard 5

The water quality of all water bodies, including ground water where applicable, located on or influenced by BLM lands would achieve or exceed the Water Quality Standards established by the State of Colorado. Water Quality Standards for surface and ground waters include the designated beneficial uses, numeric criteria, narrative criteria, and anti-degradation requirements set forth under State law as found in (5 CCR 1002-8), as required by Section 303(c) of the Clean Water Act.

Various ephemeral, intermittent and perennial stream segments flow across many of the selected federal parcels that would be exchanged. Most of the selected parcels have tributary

water that would flow towards the upper Yampa River, which needs to have water quality sufficient to support Aquatic Life Cold 1, Recreation 1a, Water Supply and Agriculture. Tributary water in the few parcels in the northern portion of Routt County would flow towards the upper Little Snake River, which has the same classified beneficial uses and water quality requirements. In southern Routt County the same beneficial uses need to be supported by the water quality and water supplied in the East Fork of the Williams Fork River. Beneficial uses classified for the South Fork of the Williams Fork are the same, except that the flow regime of the stream does not require it to be available for water supply. Generally the tributary water to these streams, especially ephemeral systems, has less stringent requirements for water quality. Currently the water quality of the stream segments on the selected federal parcels is supporting the classified beneficial uses. No stream segments are listed as having impaired water quality.

Likewise, the water quality of the stream segments located on the offered Emerald Mountain Parcel is supporting the classified beneficial uses. No stream segments are listed as having impaired water quality.

The Emerald Mountain Land Exchange would meet the Water Quality Standard for healthy public lands because the water quality of the stream segments located on the land exchange parcels is supporting the classified beneficial uses and no stream segments are listed as having impaired water quality.

The No Action Alternative would also meet the Water Quality Standard for healthy public lands. The water quality of stream segments would still support the classified beneficial uses. No impaired stream segments are located on the federal parcels that would remain under federal ownership.

8.0 Cumulative Effects

The geographic area for analyzing cumulative impacts of the Proposed Action and No Action Alternative is the Little Snake Resource Area. The current land exchange, when added to past and future exchange proposals, has an overall cumulative effect of improved management of public lands through consolidation of ownership. The land exchange is primarily intended to improve management effectiveness though consolidation of land ownership patterns, to increase public recreational opportunities, and to acquire and protect important wildlife habitat. The reconfiguration of federal, state, and private land ownership enables more efficient management and alleviates conflict between users of public land and owners of private property. More land exchanges to achieve these objectives may occur within the Little Snake Resource Area, but any future land exchanges are not dependent upon this land exchange.

9.0 Resource Management Plan

The following section analyzes the second proposed action to amend the Little Snake Resource Management Plan (RMP). The RMP amendment includes land use plan decisions that would guide the future management of the Emerald Mountain parcel if the exchange is approved. Since the Emerald Mountain parcel has been managed by the Colorado State Land Board (SLB), the BLM is evaluating four alternatives to determine which alternative best fits the management goals and objectives of the BLM and the public. The four potential alternative management plans are described Section 9.0 of this document, and evaluated for impacts to resources resulting from management prescriptions identified for each alternative.

The RMP would also be amended to allow acquisition of the Emerald Mountain parcel. The majority of lands in the RMP planning unit surrounding Emerald Mountain are identified for disposal. This amendment to the existing RMP would identify Emerald Mountain as an acquisition area to consolidate federal lands. The Emerald Mountain parcel would then become a retention area to be managed under multiple use concepts.

As outlined in the BLM *Land Use Planning Handbook (H-1601-1),* the alternatives must "identify a range of reasonable combinations of resource uses and management practices." Further, the regulations of the Council on Environmental Quality (CEQ), Title 40 of the Code of Federal Regulations (CFR) require that an Environmental Assessment (EA) explore and objectively evaluate all reasonable alternatives to a proposed action. Based on these requirements and internal input from BLM resource specialists, four alternatives were developed for management of the Emerald Mountain parcel following the proposed land exchange.

Figure 3 illustrates the boundary of the proposed BLM Management Area for the Emerald Mountain parcel. In addition, adjacent lands owned by the City of Steamboat Springs, the State of Colorado, and the Colorado Division of Wildlife, and private lands with conservation easements are indicated because these may be relevant to public access opportunities.

9.1 Management Objectives

Three community based meetings and plan amendment scoping were conducted over a two month period to develop a set of management objectives that would guide the BLM in formulating the Resource Management Plan amendment for the Emerald Mountain parcel. The following comprehensive management objectives were developed through this process and are common to all four alternatives:

- Preserve and protect the area for the enjoyment of present and future generations.
- Allow continued management of grazing leases and permits in accordance with current BLM policy.
- Promote collaboration between the BLM and the grazing permittees to manage grazing for sustainability and conservation in accordance with land health guidelines and standards for rangeland health.
- Establish travel management goals and actions limiting motorized and mechanized vehicle use to designated roads and trails.
- Expand environmental education and interpretation opportunities.
- Enhance wildlife habitat.

9.2 Introduction to the Alternatives

The extensive collaboration process resulted in the four alternatives presented here. All four alternatives comply with state and federal regulations, laws, and standards, including the Federal Land Policy and Management Act (FLPMA), BLM best management practices (BMP), and standard mitigation. In addition, all alternatives include measures for achieving Colorado Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado (BLM 1996).

The four alternatives represent four directions management of Emerald Mountain may take and still meet the purpose and need for this RMP amendment, and also remain consistent with the management objectives identified through the scoping process. The alternatives are multi-resource directed but the major differences deal with recreation management and issues. Each alternative emphasizes a different recreation management approach to the area and incorporates a unique set of objectives and actions.

The range of reasonable alternatives developed for this plan includes the following:

9.2.1 Alternative 1 – Traditional Use

The area is managed as an Extensive Recreation Management Area (ERMA). The recreation management objectives are to custodially maintain visitor health and safety, reduce user conflict, and protect resources. Dispersed recreation activities include: walking/hiking, Nordic skiing, mountain biking, along with hunting and camping. The area is closed to recreational motorized use except snowmobiles. Mechanized travel is limited to certain designated routes until a Travel Management Plan (TMP) is completed. Cross-country foot, horse and other stock travel is permitted everywhere. The area is designated as Visual Resource Management (VRM) Class II where a low level of landscape change is allowed.

9.2.2 Alternative 2 – Modified Use

The area is managed as two adjoining Special Recreation Management Areas (SRMAs) and two Recreation Management Zones (RMZs). SRMA North (RMZ 1) has a destination recreation management strategy targeting visitors to Steamboat Springs (not exclusive of local residents) wanting to participate in strenuous and challenging mountain biking and Nordic skiing on primitive trails close to town. SRMA South (RMZs 2) is managed under a community recreation market strategy primarily for local residents to engage in wildlife viewing and hunting in a backcountry setting. Other recreation activities are allowable to the extent they are compatible with the targeted activities. The area is closed to recreational motorized use. The area is initially closed to mechanized and equestrian recreation travel until designated routes are identified in a TMP. The TMP and a Recreation Activity Management Plan (RAMP) would be concurrently developed in cooperation with local community partners to identify specific implementation actions. The area is designated as Visual Resource Management (VRM) Class II where a low level of landscape change is allowed.

9.2.3 Alternative 3 – Conservation Use

The area is managed as an ERMA. The recreation management objectives are to custodially maintain visitor health and safety, reduce user conflict, and protect resources. Recreation activities include: walking/hiking, Nordic skiing, mountain biking, and game hunting. The area is closed to motorized travel except for authorized uses. Mechanized and general recreational use is limited to designated travel corridors except for game hunting on foot or horseback which may go cross-country. The area is designated as Visual Resource Management (VRM) Class II where a low level of landscape change is allowed. This alternative was developed to be consistent with the Emerald Mountain Partnership management proposal.

9.2.4 Alternative 4 – Limited Use

The area is managed as a single SRMA with two Recreation Management Zones (RMZs). The SRMA has a community market strategy to meet the recreation demand of community residents of the Steamboat Springs area. RMZ 1 targets opportunities for participation in strenuous and challenging mountain biking and Nordic skiing on primitive trails close to town. RMZ 2 targets opportunities for participation in self-guided outdoor adventure and nature studies. Other recreation activities are allowable to the extent they are compatible with the targeted activities. The area is closed to unauthorized motorized use. The area is initially closed to mechanized and equestrian travel until designated routes are identified in a TMP. The TMP and a RAMP would be concurrently developed in cooperation with local community partners to identify specific implementation actions. The area is designated as Visual Resource Management (VRM) Class II where a low level of landscape change is allowed.

9.3 Recreation Management Planning

Please refer to Appendix B (Recreation Planning Tools) for an explanation of the requirements and process involved in planning for recreation as a resource in this RMP amendment. It includes discussions on Benefits-Based Management (BBM) and Natural Resource Recreation Settings (NRRS). These concepts are essential to understanding why the alternatives are structured as they are.

9.4 Alternatives Discussion by Resource

This section describes management of 18 resource categories under each of the four management plan alternatives. For 13 of the resource categories, management would be the same under all four alternatives. These categories are summarized below in Section 9.4.1. Management of five additional resource categories, including Minerals and Energy Resources, Wildlife, Special Status Species, Recreation, and Travel Management would vary under the four alternatives. Management of these resource categories is described separately for each of the four alternatives in Sections 9.4.2 through 9.4.5.

9.4.1 Resources Common to All Alternatives

The following resource categories would be managed similarly under all four alternative plans, and are therefore summarized below: Land and Rights-of-way, Soils, Surface & Ground Water, Climate & Air Quality, Noise, Vegetation, Weed Management, Forestry, Fire Management, Rangeland, Cultural Resources, Paleontology, and Visual Resource Management.

9.4.1.1 Lands and Rights-of-Way

The BLM would consider acquisition of additional lands in the vicinity of Emerald Mountain if such acquisition would enhance management of identified resource values and public benefits.

Rights-of-Way (ROW) proposals would be reviewed and approved on a case-by-case basis and would be subject to constraints to protect sensitive resource values, and address issues identified in the Emerald Mountain planning process.

Utility line proposals would be required to be located along the existing power line corridor or underground and along the edge or within roadways. Additions or modifications to aboveground utilities would only be considered within the existing utility corridors where aboveground facilities presently exist.

Additional communication sites would be considered if the proposed use was located adjacent to the existing communication towers on Emerald Mountain. The facilities would involve minimal, low, unlighted tower structures. Collocation on existing facilities would be preferred. No additional communication sites would be considered at other areas. The BLM reserves the right to develop minor communication facilities for administrative purposes at existing sites.

No major wind energy or solar sites would be allowed.

A cadastral survey would be completed to locate public land boundaries.

9.4.1.2 Soils

To encourage the protection of soils, the BLM would follow Best Management Practices (BMP), examples of BMP are proper site selection, avoid ridge tops, design trails and follow the contour of the landform or mimic lines in the vegetation, and exercise careful placement of proposed trails and facilities. Recreation, access and travel routes, and grazing would be managed to minimize erosion, salinity, selenium yields and compaction.

9.4.1.3 Water Resources

Surface Water. The BLM would manage all activity within the acquired lands to ensure that water quality standards are met or exceeded, using BLM Land Health Standards as the water quality indicator.

All water sources, including both surface water and ground water sources, would be inventoried to determine their exact location, flow rates and volumes, and types of beneficial uses of water at the location. In addition, the condition and type of water development, and

documentation of any sensitive species dependent on the water source would be included in the inventory.

The recreation, range management, and wildlife programs would identify the location and type of any water shortages that prevent them from meeting management objectives.

BLM would acquire water rights on all water sources within the acquired lands that BLM uses to meet management objectives. Water rights would be sought for livestock, wildlife, and recreation on all water sources that support those uses when BLM acquires the water rights. BLM would follow the procedural and substantive provisions of Colorado water law.

Any activity within the acquired lands would incorporate mitigation into management actions to protect water resources. Measures designed to minimize erosion and water quality deterioration would continue to be required in site-specific plans for any activity requiring surface disturbance within the acquired lands. Measures to minimize erosion and water quality effects would be further analyzed in environmental assessments for any surface disturbing activities within the acquired lands per requirements under the National Environmental Policy Act (NEPA).

Ground Water. The BLM would continue to manage, preserve and protect ground water resources, including springs, and would complete an inventory of springs. Inventoried springs in the ERMA may be developed and would continue to be used by a variety of users and wildlife, as well as to sustain associated riparian areas. The BLM would continue to utilize existing water wells for stock watering purposes.

The recreation, range management, and wildlife programs would identify the location and type of water shortages that prevent them from meeting management objectives.

BLM would acquire water rights on all water sources within the ERMA that BLM uses to meet management objectives. Water rights would be sought for livestock, wildlife, and recreation on all water sources that support those uses. BLM would follow the procedural and substantive provisions of Colorado water law.

In the event ground water is used or affected by mineral activities, BLM would ensure protection of the ground water resource and follow the procedural and substantive provisions of Colorado water law.

9.4.1.4 Climate and Air Quality

Activities and projects on BLM acquired lands would comply with applicable local, state, and federal air quality regulations. National Ambient Air Quality Standards would be met, or exceeded, for all activities occurring within the acquired lands. Mitigation to minimize air quality degradation would be incorporated into project proposals as appropriate.

9.4.1.5 Noise

Public lands would be managed in accordance with Colorado NS 25-12-106.

9.4.1.6 Vegetation

Plant communities on Emerald Mountain would be managed to maintain and/or improve the quality and health of native plant communities. Plant communities would be managed for a variety of seral stages depending on current conditions, site-specific concerns and capabilities, and multiple-use considerations.

Per 43 CFR 4180, all vegetation would be managed to meet the Fundamentals of Rangeland Health. More specifically, upland plant communities would be managed in conformance with Standard 3 of the Colorado Public Land Health Standards which states, “Healthy, productive

plant... communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential. Plants... at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations and ecological processes."

Where it is determined that a plant community does not meet this standard based on established indicators, BLM would take corrective action prior to the start of the next grazing season where livestock grazing is determined to be a causal factor for the standard not being met (43 CFR 4180.1). If the causal factor is determined to be an activity or condition other than livestock grazing, corrective actions would also be taken, but the timeframe for initiation of treatment may be longer than one year. Treatments and manipulation of vegetation to meet land health objectives can include, but are not limited to, changes in livestock use, prescribed fire, herbicide treatments, and mechanical treatments. Any areas that receive treatments consisting of direct manipulation of vegetation would be rested from livestock grazing for a minimum of two growing seasons.

9.4.1.7 Weed Management

The BLM would manage noxious weeds using an Integrated Weed Management (IWM) approach. Weed management would focus on controlling and preventing the spread of noxious weeds and other undesirable plant species. Weeds occurring on Emerald Mountain include whitetop, Dalmatian toadflax, Canada thistle, houndstongue, and coast tarweed. A partnership with Routt County would be developed to continue the weed management activities that the county has been conducting on Emerald Mountain.

9.4.1.8 Forestry

Forestry management would focus on maintaining healthy woodland and forest ecosystems. Basic information on the condition class, fire regime, current fire potential and current stand condition would be collected to determine forest health. Fuel wood and fence post cutting would only be allowed in conjunction with projects to improve forest health. Limited cutting to facilitate clearing trees for trails, recreation projects or habitat improvement projects would be considered.

9.4.1.9 Fire Management

Emerald Mountain would be managed in accordance with the current Fire Management Plan for the Northwest Colorado Fire Management Program. BLM would coordinate with Routt County concerning wildfire issues. Fire management objectives for this parcel would be:

1) Protect the community of Steamboat Springs from wildfire.
2) Reduce the risk of wildfire escaping public lands.
3) Reduce the risk of large, high intensity wildfires.
4) Improve or maintain healthy ecosystems.

Hazardous fuels reduction projects would be identified to mitigate any existing fire hazards. Prescribed fire or mechanical methods may be used to reduce fire hazards or improve resource conditions.

9.4.1.10 Rangeland

Livestock grazing would be managed in accordance with the Taylor Grazing Act of 1934, as amended (P.L. 73-482), the Federal Land Policy and Management Act of 1976 (P.L. 94-579), Public Rangelands Improvement Act of 1978 (P.L. 95-514), 43 CFR Subchapter D (4000), and BLM Policy. Pursuant to 43 CFR 4110.1-1, existing grazing leases issued by the State Land Board (SLB) would be honored by the BLM under the existing terms and conditions of those leases in effect at the time of acquisition and would not be subject to the provisions of 43 CFR 4110.1 which specifies the mandatory qualifications an operator must have to graze on BLM lands. A lease would continue to be exempt from the mandatory qualifications regulations until

the lease is transferred, adjustments in grazing preference are necessary, or the lease is due for renewal at which time all provisions of 43 CFR 4100 would become applicable. Currently, all existing grazing leases issued by the SLB on the parcel to be acquired are renewed on an annual basis; therefore, the period for exemption from mandatory qualifications would be one year or less.

Upon expiration of State Land Board-issued grazing leases, BLM would renew grazing leases in conformance with the National Environmental Policy Act (NEPA) by preparing Environmental Assessments (EA's) to analyze the impacts of each specific grazing lease. During the renewal process, BLM would work with applicants to specify levels and timing of grazing that would maintain and/or improve forage, soil, wildlife habitat, water quality, and other resources. Renewal EAs may also analyze the need for and impacts of any additional range improvements needed to facilitate management goals. Holders of existing leases would be given preference to receive a renewed lease. Renewed leases would be for a period of ten years where the operator owns the offered base property. For operators who offer leased base property, renewed leases would coincide with the expiration of the base property lease, but would not exceed ten years. Grazing leases would not convey any interest, right, or title in any lands or resources held by the United States.

BLM would assume ownership of all existing permanent range improvements, i.e. fences, ponds and other water developments, and any livestock handling facilities. Each existing improvement would be assigned a BLM project number and a Cooperative Agreement for Range Improvements would be prepared for each project to specify and assign maintenance responsibilities to one or more livestock operators and the BLM. Any future range improvement construction would be implemented under 43 CFR 4120.3.

Allotments would be created based on private land base and existing lease boundaries. Changes in allotment boundaries may be made in accordance with 43 CFR 4110.2-4, if necessary, to facilitate proper management of the range resource. Changes in permitted use may occur based on ecological site inventories, monitoring data (including, but not limited to, utilization and actual use), or other acceptable information at any time during a lease term.

9.4.1.11 Cultural Resources

Cultural resources would be managed according to existing legislation, regulations, Executive Orders, and BLM policy. Measures to protect and manage cultural resources would be required in all land use activity plans. Measures would be designed in conjunction with appropriate consulting parties as defined by the BLM National Programmatic Agreement, Colorado State Protocol, and BLM Manual (8100 series) addressing cultural resource management.

Section 106 of the National Historic Preservation Act (NHPA) would be completed for federally funded or licensed undertakings prior to all surface-disturbing or other activities that could affect cultural resources. Cultural resources and areas of religious and cultural importance that are eligible for listing on the National Register of Historic Places would be identified and assigned to the appropriate cultural resource use allocation. Mitigation should be completed on historic properties that are adversely affected by the undertaking. Preservation of resources in place is the preferred mitigation strategy.

Proposed activities would not be approved until compliance with Section 106 of the NHPA has been completed and documented. Cultural resource condition would be monitored during implementation.

9.4.1.12 Paleontology

The BLM would manage paleontological resources of the area guided by the BLM 8270 Manual and Handbook for the Management of Paleontological Resources, the Colorado Statewide Oil and Gas Development and Leasing EIS, and the Little Snake Field Office Management Plan.

The ERMA would be open to recreational collecting of common invertebrate and plant fossils. Scientific collecting would be allowed by valid BLM Paleontological Resources Use Permit only.

Monitoring data and other information would be compiled, updated, and analyzed at least annually to help in management decisions concerning appropriate uses, education, interpretation, and protection and preservation of paleontological resources.

9.4.1.13 Visual Resource Management

The Emerald Mountain parcel would be designated as a Visual Resource Management (VRM) Class II (low levels of landscape change allowed).

9.4.2 Alternative 1 – Traditional Use

9.4.2.1 Minerals and Energy Resources

Subject to valid existing rights, all federal land within the ERMA and all land and interest in land acquired by the United States would be available for leasing, open for mineral entry and open for the development of saleable minerals.

9.4.2.2 Wildlife

Land uses would be managed to assure wildlife habitats meet the Colorado Public Land Health Standards. Native plant communities would be maintained to provide quality habitat for a variety of species. Biological diversity and ecosystem health would be maintained in order to contribute to healthy wildlife populations. BLM would coordinate with the Colorado Division of Wildlife (CDOW) to assess the need for seasonal closures to mechanized and/or motorized recreation in critical wildlife habitat. Monitoring would focus on the impacts of recreation to wildlife and wildlife habitat.

9.4.2.3 Special Status Species

Land uses affecting special status species and their habitat would be managed to assure compliance with the Endangered Species Act and BLM special status species policies. Conservation measures in the Canada Lynx Conservation Assessment and Strategy would be followed in potential lynx habitat. The U.S. Fish and Wildlife Service (USFWS) would be consulted on any proposed action which may affect Canada Lynx or their habitat. Activities and uses would be designed to protect healthy, native plant communities which provide quality habitat for BLM sensitive species.

9.4.2.4 Recreation

Emerald Mountain is identified as an ERMA (see Appendix B - Recreation Planning Tools for detailed recreation information).

Recreation Management Objectives

RMA objectives are directed at: 1) visitor health and safety, 2) reducing use and user conflict, and 3) protecting resources:

1. Visitor Health and Safety

   Ensure that participants in dispersed recreation activities have little to no potential for serious accidents (< two accidents per year that require hospitalization) due to human-created circumstances and no (zero) exposure to hazardous visitor health conditions throughout the life of this plan.

2. Use and User Conflicts:

   Mitigate conflicts between the main dispersed recreation activities so recreation use does not interfere with traditional land uses/practices (which occurred before acquisition by

BLM) directly by way of recreation restrictions/closures and indirectly through education and interpretation throughout the life of this plan.

3. Resource Protection:

Mitigate conflicts between the main dispersed recreation activities and natural resources and critical wildlife habitat (as defined by resource objectives or land health standards) directly by way of recreation restrictions/closures and indirectly through education and interpretation throughout the life of this plan.

Recreation Management Implementation Actions

These Custodial recreation implementation actions are focused on addressing projected recreation-tourism use and maintaining opportunities for visitors to participate in compatible dispersed recreation activities.

Management

- Sign BLM boundaries and key access points.
- Where trails cross fences, replaced fence sections with gates or other appropriate modifications to minimize damage to fences and reduce trespass onto private lands.
- Design, designate or re-locate recreational trails, access points and parking areas to minimize erosion, wildlife disturbance, and maintenance.

Marketing/Information/Interpretation

- Provide minimal informational signage, maps, information kiosks, and brochures as required to meet ERMA recreation objectives.

Monitoring

- BLM/partners would monitor recreation use and users for potential conflict with resource management objectives as defined by Land Health Standards.
- BLM would utilize the CDOW assessment of the need for recreation mitigation/use restrictions to protect critical wildlife habitat during essential time periods.

Administration

- Provide limited on-the-ground BLM staff presence and visitor services.
- Provide visitor services and develop recreation facilities only to meet recreation management objectives, not to enhance recreation activity participation.
- Engage interested organizations, agencies, users, local governments and recreation-tourism industries as cooperative participants to carry out recreation and resource objectives and planned implementation actions.
- Specific Use Restrictions:
    - Hunting for both big game & small game is allowed in accordance with CDOW regulations.
    - Target/projectile shooting is allowed.
    - Safety zones may be designated for all shooting sports.
    - Dogs would be regulated according to local laws.
    - Camping and overnight use are allowed.

9.4.2.5 Travel Management and Access

Comprehensive travel management planning addresses all resource use aspects and accompanying modes and conditions of travel on the public lands, not just motorized or vehicle activities. Land use plan decisions must: 1) delineate travel management areas and 2) designate off-highway vehicle management areas.

1. Delineation of Travel Management Areas (TMAs). The TMA consists of all public lands within the Emerald Mountain parcel. The TMA delineation is:

a. *Muscle-powered travel* (i.e. foot, ski, horse, stock) *is open all year.* Open TMA delineation means cross-country foot, horse and other stock travel is permitted everywhere in the TMA.
b. *Mechanized travel* (non-motorized wheeled conveyance) *is limited to designated routes all year*. Limited TMA delineation means mechanized travel and access is allowed only on designated routes identified on maps available onsite, or at the Little Snake Field Office and other local recreation information locations.

The TMA delineations are subject to additional restrictions (i.e. seasonal, area, type and number) set forth in the Decision Record (DR) for the EA or in subsequent travel planning.

In developing this designation the BLM considered the following:

a. Consistency with management objectives aimed at conserving and protecting traditional uses and protecting natural resources;
b. Traditional users (i.e. grazing permittees);
c. Resource objectives for allowing travel in the area and the primary means of travel allowed to accomplish the objectives; and
d. Landscape characteristics to be maintained for the Class II VRM designation.

2. Designation of Off-Highway Vehicle (OHV) Management Areas. The area is designated closed to OHV travel on public lands except for snowmobiles which are allowed to travel cross-country if there is at least 12" of snow (see 43 CFR 8342.1). OHVs include any motorized vehicle capable of, or designed for, travel off an improved road and on or immediately over land, water, or other natural terrain.

The designation excludes:

1. Any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes;
2. Any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved (i.e. grazing permittee, CDOW personnel).
3. Vehicles in official use. Official use means use by an employee, agent, or designated representative of the Federal Government or one of its contractors, in the course of his employment, agency, or representation [43 CFR 8340.0-5(a)(1-5)].

A decision defining an on-the-ground designated road and trail network is deferred to a subsequent TMP. The intent is to allow more time for field personnel to: 1) inventory the existing travel network; 2) work with partners and the public to designate an appropriate road and trail network to meet management objectives; and 3) obtain necessary funding.

The subsequent TMP would address: the road and trail selection strategy, restrictions/constraints and implementation actions would be directed towards: 1) achieving resource objectives, 2) protecting visitor health and safety, 3) reducing use and user conflicts.

The following general tasks and timeline would be followed to complete the TMP dependent on adequate staffing and funding:

TASK	ESTIMATED TIMEFRAME
1. Existing road and trail inventory completed.	Six months after the signing of the DR for the EA.
2. Implementation level planning and public collaboration completed.	Ten months after the signing of the DR for the EA.
3. The road and trail selection process completed and signed.	One year after the signing of the DR for the EA.

3. Travel Management Implementation Actions

Only the Cow Creek Road (Routt County Road 45) would be open to recreational motorized travel (subject to state and local laws). Other existing routes would remain open only for BLM administrative, authorized, and emergency motor vehicle uses. (Instruction Memorandum No. 2004-005, Clarification of OHV Designations and Travel Management in the BLM Land Use Planning Process, on Oct. 6, 2003). A road and trail network map would be developed when inventory work is completed.

- Designate existing portions of the following routes for mechanized use (mountain biking, etc.):
  - Ridge Trail
  - Agate Creek Trail from the Ridge Trail to the Humble Ranch public easement
  - Cow Creek Trail from the Ridge Trail to Cow Creek Road
- Develop non-motorized, single track trails if demand and resources become available.
- Install route limitation and directional signs on designated routes.
- Establish and mark one or more legal access points and parking areas along the Cow Creek Road.
- As necessary, where designated routes cross fences, fence sections would be replaced by gates or other appropriate modifications to minimize impacts to other Emerald Mountain resource management priorities.
- The BLM would implement seasonal closures of specific areas on Emerald Mountain as needed to protect critical wildlife habitats in coordination with CDOW.

9.4.3 Alternative 2 – Modified Use

9.4.3.1 Minerals and Energy Resources

Subject to valid existing rights, all federal land within the SRMA or ERMA, and all land and interest in land acquired by the United States are withdrawn from:

1) All forms of mineral entry, appropriation, or disposal under public land laws;
2) Location, entry and patent under the mining laws; and
3) The operation of the mineral leasing, mineral materials, and geothermal leasing laws, and the amendments thereto.

Valid existing rights would be processed within specified or applicable time frames.

One exception is that sand and gravel and other materials used for road base could be developed on a limited basis to maintain or improve designated roads and trails.

9.4.3.2 Wildlife

Land uses would be managed to assure wildlife habitats meet the Colorado Public Land Health Standards and native plant communities would be maintained to provide quality habitat for a variety of species. Biological diversity and ecosystem health would be maintained in order to contribute to healthy wildlife populations. Important elk habitat may be enhanced to improve habitat conditions. Other habitat improvement projects for a variety of wildlife species would be implemented when necessary and feasible. Trails and other facilities would be designed and located to minimize disturbances to wildlife. BLM would coordinate with CDOW on wildlife related issues.

Emphasis would be placed on allowing a variety of non-motorized recreational opportunities while still protecting wildlife resources. Partnerships would be developed to provide educational opportunities on Emerald Mountain. These may be in the form of interpretive sites, interpretive trails or watchable wildlife sites.

9.4.3.3 Special Status Species

Land uses affecting special status species and their habitat would be managed to assure compliance with the Endangered Species Act and BLM special status species policies. Conservation measures in the Canada Lynx Conservation Assessment and Strategy would be followed in potential lynx habitat. USFWS would be consulted on any proposed action which may affect Canada lynx or their habitat.

Activities and uses would be designed to protect healthy, native plant communities which provide quality habitat for BLM sensitive species. Columbian sharp-tailed grouse habitat would be managed to provide a mosaic of seral stages necessary for breeding, nesting and brood rearing. The BLM would coordinate with partners to conduct surveys to determine habitat use by greater sage grouse, ferruginous hawks and northern goshawks.

9.4.3.4 Recreation

Emerald Mountain is managed as two adjoining SRMAs (See Appendix-B for definitions and Figure 4 for RMZs in Alternative 2). Emerald Mountain North SRMA (RMZ 1) would be managed under a destination recreation-tourism market strategy targeting Steamboat Springs area visitors (not exclusive of local residents) wanting to participate in strenuous and challenging mountain biking and Nordic skiing on primitive trails which are close to town. Emerald Mountain South SRMA (RMZ 2) would be managed under a community recreation market strategy primarily for Steamboat Springs area residents in RMZ 2 to engage in wildlife viewing and hunting in a backcountry setting. Other recreation activities are allowable to the extent they are compatible with the primary targeted activities.

Recreation Management Zone 1 - Mountain Ridge

Management Objective: Provide opportunities primarily for Steamboat Springs area visitors (and others) to engage in strenuous, challenging mountain biking, Nordic skiing, and similar activities on primitive trails which are close to town, so that by the year 2010 their mean (average) response is at least a “moderate” (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=complete/total realization) attainment of the following experiences and benefits:

Targeted Recreational Opportunities and Outcomes for RMZ 1 - Mountain Ridge (See Appendix B for definitions and Figure 4). These are not exclusive of other activities, experiences and benefits consistent with the management objectives of the RMZ.

Activity Opportunities	Mountain biking and Nordic skiing
Experience Opportunities and Outcomes	• developing skills and abilities • enjoying strenuous outdoor physical exercise • enjoying having access close to town for outdoor activities.
Benefit Opportunities and Outcomes	
Personal	• Improved skills and abilities • Greater competence • Greater confidence • Improved cardio and muscle strength • Improved capacity for outdoor physical activity • Improved understanding of our community’s dependence and impact on public lands and adjoining private lands
Household/ Community	• Enhanced outdoor oriented lifestyle • Increased pride in the community

Economic	• Reduced health maintenance costs • Increased desirability of Steamboat as a place to visit, live, or retire
Environmental	• Improved respect for public and privately-owned lands

Prescribed Setting Character for RMZ 1 - Mountain Ridge: The following are the natural resource setting conditions prescribed to produce activity, experience and benefit opportunities: and facilitate the attainment of the targeted outcomes. The prescriptions would be accomplished by sustaining some existing recreation setting characteristics and carrying out implementation actions designed to change some characteristics of the recreation setting (See Appendix B for definitions and Figures 4-6).

Prescribed Physical Setting Summary	The area would generally retain its existing remoteness and naturally appearing landscape. Trails would be marked and maintained. Trailheads with basic toilets would be provided.
Prescribed Social Setting Summary	Visitors can expect a moderate amount of contacts with others and group sizes averaging up to 12 people per group. Some evidence of visitor use, vehicle tracks and worn vegetation likely.
Prescribed Administrative Setting Summary	Mechanized and authorized motorized use (2X4s & 4x4s) acceptable. Brochures, maps and some BLM staff/volunteers occasionally available to assist visitors. Periodic enforcement presence. Occasional signing with rules clearly posted at access points. Domestic animals present, non-working dogs must be on a leash. Individual user fees possible.

Recreation Management RMZ 2 - East Cow Creek

Management Objective: Provide opportunities primarily for Steamboat Springs area residents (and others) to engage wildlife viewing, hunting, and similar activities in a backcountry setting so that by the year 2010 their mean (average) response is at least a "moderate" (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=complete/total realization) attainment of the following experiences and benefits:):

Targeted Recreational Opportunities and Outcomes for RMZ 2 - East Cow Creek (See Appendix B for definitions and Figure 4). These are not exclusive of other activities, experiences, and benefits outcomes consistent with the management objectives of the RMZ.

Activity Opportunities	Wildlife viewing, Hiking, Horseback riding, and Hunting
Experience Opportunities and Outcomes	• enjoying natural aesthetics and wildlife • enjoying escape from the crowds • enjoying tranquility and peacefulness
Beneficial Opportunities and Outcomes	
Personal	• Closer relationship with nature • Improved appreciation of nature • Positive change in mood and emotion • Reduced stress • More holistic sense of well-being
Household/ Community	• Greater community involvement in recreation and land use decisions • Enhanced awareness of community dependence on public lands

Economic	• Increased desirability of Steamboat Springs as a place to work, live, visit, or retire
Environmental	• Greater protection of wildlife and plant habitat from growth, development, a public use impacts • Reduced wildlife harassment and predation by domestic pets

Prescribed Setting Character for RMZ 2 - East Cow Creek. The following are the natural resource setting conditions prescribed to produce activity, experience and benefit opportunities and facilitate the attainment of the targeted outcomes. The prescriptions would be accomplished by sustaining some existing recreation setting characteristics and carrying out implementation actions designed to change some characteristics of the recreation setting (See Appendix B for definitions and Figures 4-6).

Prescribed Physical Setting Summary	The area would generally retain its existing remoteness and naturally appearing landscape. Some trails would be marked and maintained. Trailheads with basic toilets would be provided.
Prescribed Social Setting Summary	Visitors would have few encounters with other groups that average 4-6 people per group. Some evidence of visitor use, vehicle tracks and worn vegetation likely.
Prescribed Administrative Setting Summary	Mechanized and authorized motorized use (2X4s & 4x4s) acceptable. Brochures, maps and some BLM staff/volunteer occasionally available to assist visitors. Periodic enforcement presence. Occasional signing with rules clearly posted at access points. Domestic animals present, non-working dogs must be on a leash. Individual user fees possible.

Activity Planning Framework - Alternative 2 (see Appendix B for definitions)

Management
The natural resource setting condition prescriptions would be created by sustaining some existing recreation setting characteristics and carrying out management actions designed to change some characteristics of the recreation setting.

North SRMA (RMZ 1): Management would be geared towards enhancing recreation activity opportunities for visitors to the Steamboat Springs area (not exclusive of area residents). For example, trails would be developed for mountain bikers and Nordic skiers and similar activities.

South SRMA (RMZ 2): Management would be geared towards enhancing recreation activity opportunities for residents of the Steamboat Springs area. For example, informational signing and materials would be provided for wildlife viewing, hunting, and other targeted activities.

Marketing
Basic visitor/marketing information must describe what experience and benefit opportunities are targeted, the character of recreation settings, and the service environment that exists for each Recreation Management Zone (RMZ). The BLM would work with its community partners to develop one set of RMZ-specific information materials that would simultaneously facilitate effective management and promotion. The RAMP would identify principal marketing materials and conduits to reach recreation-tourism markets targeted in this plan. The collaborative management partnership would review marketing materials to ensure consistency with the above and to ensure that what is being marketed is in fact what is being provided. All agency-specific visitor services initiatives (e.g., interpretation, promotion, special events, etc.) would be constrained to ensure that only those required to achieve the planning objectives are implemented.

Monitoring

The indicators and standards are set by the SRMA objectives and prescriptions in the plan amendment. The RAMP would outline procedural frameworks, methods and schedules for monitoring: 1) the attainment of targeted outcomes, 2) maintenance of prescribed setting character conditions and 3) implementation of planned actions.

Administration

BLM would engage the key local government and recreation-tourism industry as cooperative participants. Partners may include, but are not limited to:

City of Steamboat/Routt County	Steamboat Chamber and Resort Assn
Division of Wildlife	Colorado Tourism Office
Steamboat Nordic Council	Routt County Riders Mtn. Bike Club
Emerald Mountain Partnership Board of Directors	

- Special Recreation Permits (SRPs) would be issued as per the Colorado Special Recreation Permit Handbook.

<u>Interim Recreation Management Actions</u>

- Open the area only to the following activities until a RAMP is developed and implemented in collaboration with community partners:
  - human pedestrian travel
  - small game hunting on foot or big game hunting by foot and horseback
  - dogs on leash

9.4.3.5 Travel Management and Access

Comprehensive travel management planning addresses all resource use aspects and accompanying modes and conditions of travel on the public lands, not just motorized or vehicle activities. Land use plan decisions must: 1) delineate travel management areas and 2) designate off-highway vehicle management areas.

<u>1. Delineation of Travel Management Areas (TMAs).</u> The TMA consists of all public lands within the Emerald Mountain parcel. The TMA delineation is:

c. *Muscle-powered travel* (i.e. foot, ski, horse, stock) *is open all year.* Open TMA delineation means cross-country foot, horse and other stock travel is permitted everywhere in the TMA.
d. *Mechanized travel* (non-motorized wheeled conveyance) *is limited to designated routes all year*. Limited TMA delineation means mechanized travel and access is allowed only on designated routes identified on maps available onsite or at the Little Snake Field Office.

The TMA delineations are subject to additional restrictions (i.e. seasonal, area, type and number) set forth in the Decision Record (DR) for the EA or in subsequent travel planning.

In developing this designation the BLM considered the following:

a. Consistency with management objectives aimed at conserving and protecting traditional uses and protecting natural resources;
b. Traditional users (i.e. grazing permittees);
c. Resource objectives for allowing travel in the area and the primary means of travel allowed to accomplish the objectives; and
d. Landscape characteristics to be maintained for the Class II VRM designation).

<u>2. Designation of Off-Highway Vehicle (OHV) Management Areas.</u> The entire area is designated closed to OHV travel on public lands, with the exception of Cow Creek Road (Routt

County Road 45). OHV includes any motorized vehicle capable of, or designed for, travel off an improved road and on or immediately over land, water, or other natural terrain.
The designation excludes:

1. Any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes;
2. Any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved (i.e. grazing permittee, CDOW personnel).
3. Vehicles in official use. Official use means use by an employee, agent, or designated representative of the Federal Government or one of its contractors, in the course of his employment, agency, or representation [43 CFR 8340.0-5(a)(1-5)].

A decision defining an on-the-ground designated road and trail network is deferred to a subsequent TMP. The intent is to allow more time for field personnel to: 1) inventory the existing travel network; 2) work with partners and the public to designate an appropriate road and trail network to meet management objectives; and 3) obtain necessary funding.

The TMP would address: the road and trail selection strategy, restrictions/constraints and implementation actions would be directed towards: 1) achieving resource objectives, 2) protecting visitor health and safety, 3) reducing use and user conflicts, and 4) achieving management objectives including creating the prescribed recreation setting character for each RMZ.

The following general tasks and timeline would be followed to complete the TMP dependent on adequate staffing and funding:

TASK	ESTIMATED TIMEFRAME
1. Existing road and trail inventory (field work & GIS duties) completed.	Six months after the signing of the DR for the EA.
2. Implementation level planning and public collaboration completed.	Ten months after the signing of the DR for the EA.
3. The road and trail selection process completed and signed.	One year after the signing of the DR for the EA.

3. Interim Travel Management Actions

- BLM would initially close the entire area except for Cow Creek Road (Routt County Road 45) to motorized, mechanized and equestrian use (except for equestrian big game hunting) until the TMP can be completed. Existing routes would remain open for BLM administrative, authorized, and emergency uses. (Instruction Memorandum No. 2004-005, Clarification of OHV Designations and Travel Management in the BLM Land Use Planning Process, on Oct. 6, 2003). An interim road and trail network map would be developed when inventory work is completed.
- Establish and mark one or more legal access points and parking areas along the Cow Creek Road.

9.4.4 Alternative 3 – Conservation Use

9.4.4.1 Minerals and Energy Resources

Subject to valid existing rights, all federal land within the ERMA, and all land and interest in land acquired by the United States are withdrawn from:

1) All forms of entry, appropriation, or disposal under public land laws;

2) Location, entry and patent under the mining laws; and
3) The operation of the mineral leasing, mineral materials, and geothermal leasing laws, and the amendments thereto.

Valid existing rights would be processed within specified or applicable time frames.

One exception is that sand and gravel and other materials used for road base could be developed on a limited basis to maintain or improve designated roads and trails.

9.4.4.2 Wildlife

Land uses would be managed to assure wildlife habitats meet the Colorado Public Land Health Standards and native plant communities would be maintained to provide quality habitat for a variety of species. Biological diversity and ecosystem health would be maintained in order to contribute to healthy wildlife populations. Wildlife needs would be recognized and addressed when implementing projects and preparing plans. Critical elk habitat would be maintained and improved. BLM would coordinate with CDOW to assess the need for seasonal closures to all types of recreation in critical wildlife habitat.

9.4.4.3 Special Status Species

Activities and land uses would be managed to protect healthy, native plant communities which provide quality habitat for special status species. Land uses affecting special status species and their habitat would be managed to assure compliance with the Endangered Species Act and BLM special status species policies. Conservation measures in the Canada Lynx Conservation Assessment and Strategy would be followed in potential lynx habitat. USFWS would be consulted on any proposed action which may affect Canada lynx or their habitat. Columbian sharp-tailed grouse habitat would be maintained and improved. BLM would coordinate with CDOW to assess the need for seasonal closures to all types of recreation in critical wildlife habitat.

9.4.4.4 Recreation

Emerald Mountain is identified as an ERMA (see Appendix B - Recreation Planning Tools for detailed recreation information). Recreation direction in Alternative 3 resulted from incorporating the recreation actions outlined in the *Emerald Mountain Community Management Plan Alternative* created by the Emerald Mountain Partnership with BLM's H-1601-1 Land Use Planning Handbook guidance for recreation and visitor services.

Recreation Management Objectives

Specific beneficial outcome objectives identified in SRMAs for individuals, communities, economies or the environment, are not identified in ERMAs. ERMA objectives are directed at: 1) visitor health and safety, 2) reducing use and user conflict, and 3) protecting resources.

1. Visitor Health and Safety

   Ensure that participants in dispersed recreation activities have little to no potential for serious accidents (< two accidents per year that require hospitalization) due to human-created circumstances and no (zero) exposure to hazardous visitor health conditions throughout the life of this plan.

2. Use and User Conflicts:

   Mitigate conflicts between the main dispersed recreation activities and traditional land uses/practices (which occurred before acquisition by BLM) directly by way of recreation restrictions/closures and indirectly through education and interpretation throughout the life of this plan.

3. Resource Protection:

Mitigate conflicts between the main dispersed recreation activities and natural resources and critical wildlife habitat (as defined by resource objectives or land health standards) directly by way of recreation restrictions/closures and indirectly through education and interpretation throughout the life of this plan.

Recreation Management Implementation Actions

These custodial recreation implementation actions are focused on addressing projected recreation-tourism use and maintaining opportunities for visitors to participate in compatible dispersed recreation activities.

Subsequent implementation actions are custodial in nature and performed to sustain recreation activities and address: 1) visitor health and safety, 2) use and user conflict, and 3) resource protection as defined by land health standards.

Management

- Sign BLM boundaries and key access points.
- Where trails cross fences, replaced fence sections with gates or other appropriate modifications to minimize damage to fences and reduce trespass onto private lands.
- Design, designate or re-locate recreational trails, access points and parking areas to minimize erosion, wildlife disturbance, and maintenance.

Marketing/Information/Interpretation

- Develop and enhance: an educational emphasis, place-based educational opportunities, and land stewardship educational opportunities to meet resource management objectives.
- Develop and enhance opportunities to incorporate current Colorado Model Education Standards and/or other applicable guidelines to meet resource management objectives.
- BLM and local partners would develop an outdoor education plan.
- BLM would coordinate environmental education opportunities with youth-oriented and educational entities.
- Issue environmental education and interpretation permits as per the current BLM Colorado Special Recreation Permit Handbook to satisfy public demand and protect resource objectives.

Monitoring

- BLM/partners would monitor recreation use and users for potential conflict with resource management objectives as defined by Public Land Health Standards.
- BLM would utilize the CDOW assessment of the need for recreation mitigation/use restrictions to protect critical wildlife habitat during essential time periods.

Administration

- The BLM and the local community would identify, designate, and develop appropriate legal access points and parking areas.
- Provide limited on-the-ground BLM management presence and visitor services.
- If recreation trail corridors are established through grazing areas, such trails may be closed temporarily if required to facilitate livestock movement, trailing, or other agricultural operations.
- T&E species, Species of Special Interest, and general wildlife habitat needs would be given special emphasis when implementing projects and preparing recreation plans and developing facilities.
- Install signs and informational facilities as required to meet recreation objectives.

- Specific Use Restrictions:
    - Hunting for both big game & small game is allowed in accordance with CDOW regulations
    - No-hunting safety zones may be designated.
    - Dogs accompanying trail users would be on leashes and under control.
    - Camping and overnight use is prohibited (recreation activities would be limited to day-use only).
    - Target/projectile shooting is prohibited.

9.4.4.5 Travel Management

Comprehensive travel management planning addresses all resource use aspects and accompanying modes and conditions of travel on the public lands, not just motorized or vehicle activities. Land use plan decisions must: 1) delineate travel management areas and 2) designate off-highway vehicle management areas.

1. Delineation of Travel Management Areas (TMAs). The TMA consists of all public lands within the Emerald Mountain parcel. The TMA delineation is:

a. Muscle-powered travel (i.e. foot, ski, horse, stock) is limited *year round.* Limited TMA delineation means recreational cross-country foot, horse and other stock travel is permitted only in designated road and trail corridors (except hunting by foot or horseback and authorized uses).

b. Mechanized travel (Non-motorized wheeled conveyance) is *limited to designated routes year-round*. Limited TMA delineation means mechanized travel and access is allowed only on designated routes identified on maps available onsite or at the Little Snake Field Office.

The TMA delineations are subject to additional restrictions (i.e. seasonal, area, type and number) set forth in the Decision Record (DR) for the EA.

In developing this designation the BLM considered the following:

a. Consistency with management objectives aimed at conserving and protecting traditional uses and protecting natural resources;
b. Traditional users (i.e. grazing permittees);
c. Resource objectives for allowing travel in the area and the primary means of travel allowed to accomplish the objectives; and
d. Landscape characteristics to be maintained for the Class II VRM designation).

2. Designation of Off-Highway Vehicle (OHV) Management Areas. The entire Emerald Mountain parcel is closed to OHV travel on public lands. Only Cow Creek Road (Routt County Road 45) would be open to motorized travel (subject to state and local laws). OHV includes any motorized vehicle capable of, or designed for, travel off an improved road and on or immediately over land, water, or other natural terrain.
The designation excludes:

1. Any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes;
2. Any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved (i.e. grazing permittee, CDOW personnel).
3. Vehicles in official use. Official use means use by an employee, agent, or designated representative of the Federal Government or one of its contractors, in the course of his employment, agency, or representation [43 CFR 8340.0-5(a)(1-5)].

3) Travel Management Implementation Actions

- All public recreation and environmental education activities would be non-motorized, compatible with wildlife and agriculture activities, and initially limited to the following designated use corridors:

    - Agate Creek Trail Corridor, connecting the Agate Creek Trail and the Humble Ranch public easements with the Ridge Trail
    - Ridge Trail Corridor to Cow Creek, connecting the Blackmere Drive extension and Cow Creek
- Designate and improve trails to be sustainable before opening area for mountain bike use.
- The BLM, in cooperation with community partners, would explore the potential for trail corridor connections in addition to those above.
- The BLM, in cooperation with community partners, would study the feasibility of designing and constructing ski trails that could be used for a possible Nordic ski trail network.
- The BLM, in cooperation with the CDOW, would evaluate and, when necessary, implement seasonal closures of specific areas on Emerald Mountain including "use corridors" to protect critical wildlife habitats.
- Install route limitation and directional signs on designated routes.
- Establish and mark one or more legal access points and parking areas along Cow Creek Road.
- As necessary, where designated routes cross fences, fence sections would be replaced by gates or other appropriate modifications to minimize impacts to other Emerald Mountain resource management priorities.
- BLM would conduct recreation use monitoring and coordinate wildlife monitoring with the CDOW to assess the need for seasonal closures to motorized and/or mechanized activities, except snowmobiles, to protect critical wildlife habitat during essential time periods.

9.4.5 Alternative 4 – Limited Use

9.4.5.1 Minerals and Energy Resources

Due to the low mineral potential on the Emerald Mountain parcel, it is recommended that if the parcel becomes administered by the BLM, the mineral estate should be withdrawn from mineral entry and leasing. This would prevent speculative leasing to gain access to the parcel as well as fraudulent mining claims that could be used for surface occupancy residences near the town of Steamboat Springs.

9.4.5.2 Wildlife

Land uses would be managed to assure wildlife habitats meet the Colorado Public Land Health Standards and native plant communities would be maintained to provide quality habitat for a variety of species. Biological diversity and ecosystem health would be maintained in order to contribute to healthy wildlife populations. Important wildlife habitat may be enhanced to improve habitat conditions. Trails and other facilities would be designed and located to minimize disturbances to wildlife. BLM would coordinate with the Colorado Division of Wildlife (CDOW) to assess the need for seasonal closures to all types of recreation in critical wildlife habitat. Emphasis would be placed on protecting wildlife and wildlife habitat during critical times of the year, while allowing for limited, non-motorized recreation opportunities.

9.4.5.3 Special Status Species

Land uses affecting special status species and their habitat would be managed to assure compliance with the Endangered Species Act and BLM special status species policies. Conservation measures in the Canada Lynx Conservation Assessment and Strategy would be followed in potential lynx habitat. USFWS would be consulted on any proposed action which may affect Canada lynx or their habitat.

Activities and uses would be designed to protect healthy, native plant communities which provide quality habitat for BLM sensitive species. Columbian sharp-tailed grouse habitat would be managed to provide a mosaic of seral stages necessary for breeding, nesting and brood

rearing. BLM would coordinate with partners to conduct surveys to determine habitat use by greater sage grouse, ferruginous hawks and northern goshawks. BLM would coordinate with the Colorado Division of Wildlife (CDOW) to assess the need for seasonal closures to all types of recreation in critical wildlife habitat.

9.4.5.4 Recreation

Emerald Mountain is managed as one SRMA (see Appendix B - Recreation Planning Tools for detailed recreation information) with two distinct recreation management RMZs. The SRMA has a community market strategy intended primarily for residents of the Steamboat Springs area. RMZ 1 targets participation in strenuous and challenging mountain biking and Nordic skiing on primitive trails which are close to town. RMZ 2 targets participation in self-guided outdoor adventure and nature studies. Other recreation activities are allowed to the extent they are consistent with the targeted activities.

Recreation Management RMZ 1 – Mountain Ridge

Management Objective: Provide opportunities primarily for Steamboat Springs area residents (and others) to engage in strenuous, challenging mountain biking, Nordic skiing, and similar activities on primitive trails which are close to town so that by the year 2010 their mean (average) response is at least a "moderate" (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=complete/total realization) attainment of the following experiences and benefits:

Targeted Recreational Opportunities and Outcomes for RMZ 1 - Mountain Ridge (See Appendix B for definitions and Figure 7 for RMZs in Alternative 4). These are not exclusive of other activities, experiences, and benefits consistent with the management objectives of the RMZ.

Activity Opportunities	Mountain biking and Nordic skiing
Experience Opportunities and Outcomes	• escaping everyday responsibilities for a while • getting some needed physical exercise • enjoying having access close to home for outdoor activities • improved skills and abilities
Benefit Opportunities and Outcomes	
Personal	• Improved cardiovascular conditioning and muscle strength • Greater competence • Greater confidence • Improved physical fitness • Improved capacity for outdoor physical activity • Enhanced outdoor oriented lifestyle
Household/ Community	• Increased pride in the community
Economic	• Increased desirability of Steamboat as a place to visit, live, or retire • Reduced health maintenance costs
Environmental	• Improved understanding of the community's dependence on public lands and adjoining private lands • Improved respect for public and privately-owned lands

Prescribed Setting Character for RMZ 1 - Mountain Ridge: The following are the natural resource setting conditions prescribed to produce activity, experience and benefit opportunities,

and facilitate the attainment of the targeted outcomes. The prescriptions would be accomplished by sustaining some existing recreation setting characteristics and carrying out implementation actions designed to change some characteristics of the recreation setting (See Appendix B for definitions and Figures 7-9).

Prescribed Physical Setting Summary	The area would generally retain its remoteness and naturally appearing landscape with some primitive, maintained, and marked trails. Simple trailhead developments and basic toilets may be provided.
Prescribed Social Setting Summary	Visitors can expect a low amount of contacts with others with group sizes of 7-12 people. Some evidence of visitor use, vehicle tracks and worn vegetation likely.
Prescribed Administrative Setting Summary	Restricted motorized use (4x4s, ATVs) for administrative and permitted use. Basic maps are provided. BLM staff/volunteers seldom available to assist visitors. Occasional regulatory signing. Random enforcement presence. Domestic animals present, non-working dogs must be on a leash. Possible individual user fees.

Recreation Management RMZ 2 – Cow Creek

Management Objective: Provide opportunities primarily for Steamboat Springs area residents (and others) to engage in self-guided outdoor adventure, nature studies, and similar activities so that by the year 2010 their mean (average) response is at least a "moderate" (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=complete/total realization) attainment of the following experiences and benefits:

Targeted Recreational Opportunities and Outcomes for RMZ 2 - East Cow Creek (See Appendix B for definitions and Figure 7 for RMZs in Alternative 4). These are not exclusive of other activities, experiences, and benefits consistent with the management objectives of the RMZ.

Activity Opportunities	Wildlife viewing and Nature study
Experience Opportunities and Outcomes	• enjoying natural aesthetics and wildlife • learning about nature • enjoying exploration • enjoying tranquility and peacefulness
Benefit Opportunities and Outcomes	
Personal	• Closer relationship with nature • Improved appreciation of nature • Increased awareness and understanding of nature • Improved sense of personal accountability for acting responsibly on public lands • Greater sense of adventure • Greater sense of personal freedom • Positive change in mood and emotion • Reduced stress
Household/ Community	• Greater community involvement in recreation and land use decisions • Enhanced awareness of community dependence on public lands
Economic	• Increased desirability of Steamboat Springs as a place to work, live, visit, or retire

Environmental	• Greater protection of wildlife and plant habitat from growth, development, a public use impacts • Reduced wildlife harassment and predation by domestic pets

Prescribed Setting Character for RMZ 2 - Cow Creek. The following are the natural resource setting conditions prescribed to produce activity, experience and benefit opportunities and facilitate the attainment of the targeted outcomes. (See Appendix B for definitions and Figures 7-9)

Prescribed Physical Setting Summary	The area would generally retain its remoteness and naturally appearing landscape. Some primitive trails and some maintained and marked trails. Simple trailhead developments and basic toilets may be provided
Prescribed Social Setting Summary	Visitors can expect a low amount of contacts with others and group sizes averaging 4-6 people per group. Some evidence of visitor use, vehicle tracks and worn vegetation likely.
Prescribed Administrative Setting Summary	Mechanized and authorized motorized use (2X4s & 4x4s) may be present. Information materials describe area and activity opportunities. BLM staff/volunteer/enforcement periodically available to assist visitors. Rules clearly posted at access points. Domestic animals present, non-working dogs must be on a leash. No individual user fees.

Activity Planning Framework - Alternative 4 (see Appendix B for definitions)

Management
Management would be geared towards enhancing recreation activity opportunities for residents of the Steamboat Springs area. For example, trails would be marked and maintained for targeted activities. The natural resource setting condition prescriptions would be created by sustaining some existing recreation setting characteristics and carrying out management actions designed to change some characteristics of the recreation setting.

Marketing/Information/Interpretation
Basic visitor/marketing information would describe what recreation opportunities and beneficial outcomes are targeted, the character of recreation settings, and the service environment that exists for the RMZ(s). The RAMP would identify principal marketing materials and conduits to reach local recreation markets. The BLM would work with its community partners to develop one set of RMZ-specific information materials. The collaborative management partnership would review marketing materials to ensure consistency with the above and to ensure that what is being marketed is in fact what is being provided. All agency-specific visitor services initiatives (e.g., interpretation, promotion, special events, etc.) would be constrained to ensure that only those required to achieve the planning objectives are implemented.

Monitoring
The indicators and standards for evaluation are set by the SRMA objectives and prescriptions in the plan amendment. The RAMP would outline procedural frameworks, methods and schedules for monitoring: 1) the attainment of targeted outcomes, 2) maintenance of prescribed setting character conditions and 3) implementation of planned actions.

Administration
BLM would engage the key local government and recreation-tourism industry as cooperative participants. Partners may include, but are not limited to:

City of Steamboat/Routt County
Division of Wildlife
Steamboat Nordic Council
Emerald Mountain Partnership Board of Directors
Steamboat Chamber and Resort Assn
Colorado Tourism Office
Routt County Riders Mtn. Bike Club

- Special Recreation Permits (SRPs) would be issued as per the Colorado Special Recreation Permit Handbook.

Interim Recreation Management Actions

- Open the area only to the following activities until a RAMP is developed and implemented in collaboration with community partners:
  - human pedestrian travel
  - small game hunting on foot or big game hunting by foot and horseback
  - dogs on leash

9.4.5.5 Travel Management and Access

Comprehensive travel management planning addresses all resource use aspects and accompanying modes and conditions of travel on the public lands, not just motorized or vehicle activities. Land use plan decisions must: 1) delineate travel management areas and 2) designate off-highway vehicle management areas.

1. Delineation of Travel Management Areas (TMAs). All public lands within the Emerald Mountain TMA. The TMA delineation is:

a. *Muscle-powered travel* (i.e. foot, ski, horse, stock) *is open all year.* Open TMA delineation means cross-country foot, horse and other stock travel is permitted everywhere in the TMA.
b. *Mechanized travel* (non-motorized wheeled conveyance) *is limited to designated routes all year*. Limited TMA delineation means mechanized travel and access is allowed only on designated routes identified on maps available onsite or at the Little Snake Field Office.

The TMA delineations are subject to additional restrictions (i.e. seasonal, area, type and number) set forth in the Decision Record (DR) for the EA or in subsequent travel planning.

In developing this designation the BLM considered the following:

a. Consistency with management objectives aimed at conserving and protecting traditional uses and protecting natural resources;
b. Traditional users (i.e. grazing permittees);
c. Resource objectives for allowing travel in the area and the primary means of travel allowed to accomplish the objectives; and
d. Landscape characteristics to be maintained for the Class II VRM designation.

2. Designation of Off-Highway Vehicle (OHV) Management Areas. The entire area is designated closed to OHV travel on public lands (with the exception of the Cow Creek - Routt County road 45). OHV includes any motorized vehicle capable of, or designed for, travel off an improved road and on or immediately over land, water, or other natural terrain.
The designation excludes:

1. Any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes;
2. Any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved (i.e. grazing permittee, CDOW personnel).
3. Vehicles in official use. Official use means use by an employee, agent, or designated representative of the Federal Government or one of its contractors, in the course of his employment, agency, or representation [43 CFR 8340.0-5(a)(1-5)].

A decision defining an on-the-ground designated road and trail network is deferred to a subsequent TMP. The intent is to allow more time for field personnel to: 1) inventory the existing travel network; 2) work with partners and the public to designate an appropriate road and trail network to meet management objectives; and 3) obtain necessary funding.

The TMP would address: the road and trail selection strategy, restrictions/constraints and implementation actions would be directed towards: 1) achieving resource objectives, 2) protecting visitor health and safety, 3) reducing use and user conflicts, and 4) achieving management objectives including creating the prescribed recreation setting character for each RMZ.

The following general tasks and timeline would be followed to complete the TMP dependent on adequate staffing and funding:

TASK	ESTIMATED TIMEFRAME
1. Existing road and trail inventory (field work & GIS duties) completed.	Six months after the signing of the DR for the EA.
2. Implementation level planning and public collaboration completed.	Ten months after the signing of the DR for the EA.
3. The road and trail selection process completed and signed.	One year after the signing of the DR for the EA.

3. Interim Travel Management Actions

- BLM would initially close the entire area except for Cow Creek Road (Routt County Road 45) to motorized, mechanized and equestrian use (except for equestrian big game hunting) until the TMP can be completed. Existing routes would remain open for BLM administrative, authorized, and emergency uses. (Instruction Memorandum No. 2004-005, Clarification of OHV Designations and Travel Management in the BLM Land Use Planning Process, on Oct. 6, 2003). An interim road and trail network map would be developed when inventory work is completed.
- Establish and mark one or more legal access points and parking areas along Cow Creek Road.

9.5 Environmental Consequences

9.5.1 Introduction

The following section describes the potential impacts of the proposed resource management plan alternatives on the natural and human environment. The affected for the selected Emerald Mountain Parcel is displayed in Section 6 of this document. A detailed impacts analysis was accomplished using an interdisciplinary team (IDT) of BLM resource specialists who examined each of the four proposed alternatives and each action within each alternative. The conclusions reached through this analysis are based on the IDT's knowledge of resources and the project area, review of existing literature, and information provided by experts in the BLM or other agencies.

Section 9.5 discusses only the resource management actions that would have a potential impact on other resources. The following resources would not be assessed in this section: Air Quality, Areas of Critical Environmental Concern, Prime and Unique Farmland, Wild and Scenic Rivers, Wilderness Areas, and Wildhorse Areas.

9.5.2 Lands, Rights-of-way, and Access Boundary Marking

Impacts Common to All Alternatives: Acquisitions would only occur if no significant adverse impacts to the ERMA or SRMA would result, or if significant beneficial impacts would offset such adverse impacts.

Under all four alternatives, right-of-way (ROW) proposals would be impacted by some restrictions, additional costs, and/or denial of proposals. All ROWs would need to be designed to minimize or eliminate the impacts to the values for the ERMA/SRMA identified in this resource plan amendment. Overall ROW impacts would be considered negligible due to the low potential of occurrence in the ERMA/SRMA and lack of mineral potential. Any major ROWs would be cited within the existing corridor.

Problems arising from confusion over public/private land boundaries would continue to occur.

9.5.3 Mineral and Energy Resources

Alternative 1: The energy and mineral industries would experience a positive but negligible impact due to the low potential for the occurrence of energy and mineral resources within the ERMA.

Alternatives 2, 3, and 4: Withdrawing lands within the ERMA/SRMA from all mineral and energy development would result in a negligible adverse impact to the energy and mineral industries due to the low potential for occurrence of these resources. Withdrawal lessens the potential for fraudulent claims being filed for the purpose of possessing surface rights near the city of Steamboat Springs.

9.5.4 Water Resources

9.5.4.1 Ground Water

Alternative 1: Because leasing and mineral entry would be allowed under this alternative, groundwater may potentially be impacted. If oil and gas drilling occurs, the groundwater resources would be protected by best management practices such as casing and cementing of the wellbore and thus any impacts to groundwater would be negligible or eliminated.

Moderate localized impacts to near surface groundwater could occur from mining operations. The Emerald Mountain parcel has several springs that could be altered or destroyed by surface disturbing activities that would disrupt or eliminate groundwater flow. Best management practices would be used to mitigate groundwater resources, so that spring flows would continue and water quality would be maintained.

Realty actions such as the installation of large power lines could also impact groundwater springs. Tower bases that are not properly sited to avoid springs could alter water quality and disrupt the flow of groundwater within the affected springs. Impacts would be negligible since proposed utility lines would be required to be located along the existing power line corridor or underground, and along the edge of or within roadways. Additions or modifications to aboveground utilities would only be considered within the existing utility corridors where aboveground facilities presently exist. Underground utility proposals would also be considered in the existing corridors.

Alternatives 2, 3, and 4: No impacts from energy and mineral activity would occur under Alternatives 2, 3, and 4, since the Emerald Mountain parcel would be withdrawn from mineral entry and leasing. A small sand and gravel operation may be allowed in alternatives 2 and 3, but it would not impact groundwater. Realty action impacts would be similar to the impacts described above under Alternative 1.

9.5.4.2 Surface Water

Impacts Common to All Alternatives: Impacts from surface disturbing activities could be controlled through utilization of Best Management Practices and an emphasis on the objective of meeting water quality standards. As a result, a minor long-term improvement in water quality, primarily from a reduction in sediment loading within the watershed, could occur.

With mitigation applied to any surface disturbing activities, no long-term impacts on water resources would occur. In the short term, there may be localized minor increases in sediment, and increases in salinity are also possible. Generally, these impacts are projected to be within the range of natural variation of the streams within the Emerald Mountain planning area.

Water resource management would ensure that water quality would be considered in all management actions. Mitigation would be integrated into projects to ensure that water quality impacts are minimized, and that water quality standards are met in the long term.

Wildlife and range management actions would generally benefit water quality. Working with the Colorado Division of Wildlife (CDOW) to implement population management plans could improve watershed condition by controlling vegetative cover losses and limiting trampling impacts associated with high numbers of big game. This would generally result in a negligible to minor localized decrease in sediment.

Grazing management would positively impact water quality within portions of a watershed. In general, when a grazing system is implemented, adequate water and fences are in place or are developed to facilitate movement, thereby controlling overgrazing. Trampling impacts are controlled and vegetative cover and litter are maintained, which protect the soil from accelerated erosion. Potential impacts from sediment and salinity are minimized.

Vegetation management has a goal of attaining desired plant communities and taking management actions to meet land health standards. These actions would provide for a healthy watershed condition. Good vegetative cover appropriate for each respective range site would result in minimal upland erosion. As a result, the sediment loading, and in some soils salinity loading from sheet and rill erosion, would be minimized.

Tools used to obtain desired plant communities could include changes in livestock grazing or other management activities, mechanical treatments, herbicide applications, and seedings. Some of these management techniques could result in minor short-term, localized increases in sediment depending on the soil type, proximity of the treatment area to streams, slope within the treatment area, and the presence of a buffer between treatment area and the streams. Sediment impacts would decrease rapidly as vegetative and litter cover is increased. Over the long term, the sediment levels would generally be lower than pretreatment levels.

9.5.5 Soils

Impacts Common to All Alternatives: Increased use, mounting pressure on existing roads and trails, and the possible construction of additional facilities would be the primary actions directly affecting soil resources. These have the potential to increase the extent and quantity of soil loss, including biological soil crusts. However, the application of Best Management Practices and judicious placement of any additional trails and facilities would minimize impacts to soils. In priority areas not currently meeting land health standards, reclamation and restoration projects would be implemented to accelerate the process of improving soil health.

9.5.6 Range Management

Impacts Common to All Alternatives: Impacts to ongoing livestock grazing management resulting from public recreation on the Emerald Mountain parcel are expected to be minimal. Outdoor recreation activities of all kinds commonly occur on BLM lands that are also managed for livestock grazing. There is the potential for conflict between human activity and cattle presence in the form of animal harassment by humans or dogs, but these types of conflicts

generally have a larger impact on the human activities than on livestock operations. Allowing target shooting throughout the area under Alternative 1 would create the potential for livestock to be shot, either accidentally or intentionally. However, target shooting is allowed on most BLM lands and livestock deaths or injuries resulting from this activity are rare.

The public's presence in areas of livestock operations has the greatest potential to impact range improvements. Some of the more common human impacts that can disrupt livestock operations include fence cutting; failure to close gates; vandalism to wells, pipelines, and troughs; and movement of mineral blocks. Vigilance by livestock operators and BLM personnel are the best tools to prevent or minimize disruptions from these activities.

9.5.7 Vegetation

Impacts Common to All Alternatives: Impacts to plant communities from livestock grazing, in this case by cattle, are dependent on a variety of factors. Stocking rate, season of use, duration of use, areas of use, and water distribution and availability are but a few of the management factors that determine how livestock use would affect a plant community. If any of these factors are applied inappropriately, the health of plant communities would suffer. Adverse impacts such as seral stage regression, weed dispersal and establishment, and general declines in community resilience, productivity, and habitat quality can result from poorly managed livestock grazing. If livestock grazing is managed in an appropriate manner and tailored to the capabilities and vulnerabilities of the various plant communities, it can have a neutral to positive impact on vegetation, depending on the management objectives for plant communities in a given area. BLM would be examining each existing grazing operation on the Emerald Mountain parcel and would work with operators to implement any necessary changes in livestock management based upon monitoring data, the Colorado Standards for Rangeland Health, and the Colorado Livestock Grazing Management Guidelines.

Impacts to plant communities resulting from BLM actions in Wildlife, Special Status Species, Weed Management, Ground Water, Forestry, and Fire Management programs are expected to result in neutral to positive impacts. Existing BLM standards in all of these programs are designed to maintain and/or enhance native plant communities. Impacts from specific actions under these programs would be addressed in project-specific environmental assessments or environmental impact statements.

In contrast, BLM actions relating to Minerals and Energy, Lands and Rights-of-Way could result in specific negative impacts to plant communities. Mining, drilling, and utility and road maintenance and/or construction would have localized impacts depending upon the type and duration of the activity. Specific impacts would be addressed through project-specific environmental assessments or environmental impact statements.

It is not expected that BLM management of Geology and Paleontology programs would result in any impacts to plant communities.

Alternative 1: Impacts to plant communities due to recreational activities would be greatest under this alternative. Non-motorized recreational activities restricted to existing roads and trails can perpetuate or lead to areas of localized soil compaction along roads and trails, and adjacent to trailheads and parking areas. Vegetation immediately adjacent to these areas of concentrated human activity can be subject to trampling and weed invasion. With day use activities envisioned by this alternative, most direct impacts to vegetation would be highly localized and unlikely to affect the greater plant communities existing on Emerald Mountain. There would, however, be a greater potential to perpetuate and disperse noxious weeds that currently exist on Emerald Mountain. Houndstongue, for example, produces seeds that readily adhere to clothing and animal fur and could be spread into new areas by all types of human presence including recreation.

The dispersed camping that would be allowed under this alternative could create impacts to vegetation in areas that are currently undisturbed. Because heavily vegetated, topographically varied places such as the Emerald Mountain parcel generally have few desirable camping locations, it is likely that dispersed camping would result in repeated impacts in a few specific locations. In these areas, vegetation could be repeatedly impacted by trampling, soil compaction, and weed introduction. Although dispersed camping would result in additional concentrated impacts, it would not threaten the overall health of the plant communities throughout the Emerald Mountain parcel.

Dispersed hiking and horseback riding would impact vegetation by creating casual trails, particularly in areas where topography and vegetation density "funnel" off-trail hikers and riders along particular routes. Casual trails could result in localized trampling of plants and soil compaction, creating visual trails that are increasingly followed by others. The potential for weed dispersal would also be increased by weed seeds adhering to clothing, pets, horses, and equipment. In intact plant communities, particularly higher seral communities, the potential for these activities to vector in new weeds is low. However, localized disturbances from casual trails or campsites or increased human presence in lower seral plant communities could result in the establishment of new weed populations in areas where they do not currently exist.

Winter snowmobiling activities with a minimum of 12 inches of snow cover would not result in impacts to plant communities as long as the minimum snow cover is enforced and snowmobiling use is not heavy. The Emerald Mountain parcel may be less desirable as a snowmobiling site than the existing snowmobiling areas in the vicinity of Steamboat Springs, so vegetation impacts resulting from snow compaction following heavy concentrations of snowmobile use are very unlikely. Perennial forbs and grasses would be dormant and frozen soils would lessen any chances for soil compaction that could alter existing plant communities. Nordic skiing activities could also result in concentrated areas of snow compaction, but with dormant plants and frozen soils, impacts to plant communities would be negligible.

Allowing target shooting anywhere within the parcel could negatively impact plant communities in areas of repeated use. In those areas, vegetation impacts would be similar to other areas receiving concentrated use with the additional impact of projectiles in and around backstop features. Tree mortality could result if trees are repeatedly hit by bullets or other projectiles.

Alternative 2: Horseback riding would not create the off-trail impacts described for Alternative 1 because it would be limited to designated roads and trails. However if use of trails is heavy, there would be an increased potential for impacts to grass species from foraging horses.

Hiking and Nordic skiing impacts would be similar to those described for Alternative 1. Restricting travel to designated trails in Zone 2 could result in a greater concentration of snow compaction which could lead to concentrated areas of plant mortality. These localized impacts are not expected to adversely impact the larger plant communities.

Alternative 3: There would be no adverse impacts related to target shooting, snowmobiles, or camping because these activities would be prohibited.

All adverse impacts to plant communities related to mountain biking, horseback riding, hiking, and Nordic skiing would be confined to the designated corridors with impacts similar to those described above for Alternative 1.

Alternative 4: Impacts to plant communities related to horseback riding, hiking, and Nordic skiing would be the same as those described for Alternative 1.

There would be no impacts to plant communities related to target shooting, snowmobiles, or camping because these activities would be prohibited.

9.5.8 Invasive/Non-native Species

Impacts Common to All Alternatives: Livestock management is paramount to the success of any weed management protocol on the Emerald Mountain parcel. Currently, livestock grazing is not regulated by season of use. This can be problematic because depending upon the weed species present, grazing during particular seasons can facilitate weed invasion. For example, houndstongue produces seed during the spring which can easily adhere to fur, allowing livestock and wildlife to become major seed dispersers. Livestock use could result in the spread of houndstongue throughout the allotment, but would be particularly concentrated around water sources and mineral supplements. Species such as whitetop reproduce via root segments and seed. These seeds, if consumed, can be transported by livestock throughout the allotment and are particularly opportunistic on disturbed sites such as around livestock ponds and mineral blocks. It is necessary to develop a livestock management plan for each new permittee that would specify season of use and incorporate integrated pest management principles. Through proper livestock management we can control and reduce weed populations within the Emerald Mountain parcel. Overutilization of livestock on any parcel of land facilitates the establishment of species such as whitetop, Dalmatian toadflax, Canada thistle, tarweed, and leafy spurge as the dominant cover species. Surface disturbing activities associated with livestock concentration can increase weed presence. Livestock that have ingested non-certified weed free hay within three days of turnout on this allotment provide an opportunity for weed seed to be introduced to the area as it passes through the animal. In accordance with BLM policy, only certified weed free hay shall be used on public lands.

Alternative 1: Mountain biking activities may result in the creation of new trails. These new trails would become susceptible to weed invasion with increasing ground disturbance. Areas of concentrated human use on designated roads and trails, and increased ground disturbance caused by these activities, increase the potential for the introduction of invasive species.

Recreation opportunities such as dispersed camping would primarily be concentrated in areas that are topographically conducive to that activity. Dispersed camping would result in the spread of ground disturbing impacts, however these impacts would be less severe than concentrated camping at designated campgrounds. Dispersed camping would result in a minimal impact for the introduction of weeds provided that the existing herbaceous community is healthy and remains intact. Equipment utilized by campers would be capable of transporting weed seed to new regions within the Emerald Mountain parcel. Repeated concentration of human activities would allow for greater disturbance of the existing plant community and would provide an opportunity for new populations of weeds to establish. Additional intensive monitoring of weed infestations would be necessary to identify new weed infestations. The primary weed of concern on these sites would be whitetop. Whitetop has historically been the most problematic weed on Emerald Mountain and takes advantage of any new bare ground.

Dispersed hiking and horseback riding may result in the creation of new trails. These new trails would become susceptible to weed invasion with increasing ground disturbance. Weed seed can adhere to clothing, shoes, horses, and equipment and can be distributed throughout this trail system. Off-trail hikers and horseback riding would result in a minimal impact for the introduction of weeds provided that the existing herbaceous community is healthy and remains intact. In accordance with BLM policy, only certified weed free hay shall be used on public lands. As described above for livestock, horses ingesting non-certified weed free hay within three days of entering the Emerald Mountain area create the potential for introduction of new weed seed.

Winter recreation opportunities would have no impact on weed invasion because the vegetation would be dormant and snow covered.

For shooting sports, ground disturbances resulting from concentrated human activity could facilitate weed establishment. Any increase in ground disturbance could provide an opportunity for weeds such as whitetop to become established.

Alternative 2: The existing county road provides an excellent mode of transport for weed seed species. Vehicle traffic that occurs on this road may spread existing weeds within the area as well as introduce new weed species from outside the Emerald Mt. parcel. Impacts that occur as a result of mountain biking along designated roads and trails would be the same as those described for Alternative 1.

Camping would be prohibited, thus there would be no impacts from camping.

Impacts resulting from horseback riding would be the same as those described above for Alternative 1 for both zones, but would be more localized to designated roads and trails. The off trail impacts expected in Alternative 1 would not occur.

Winter recreation would have no impact on weed dispersal because the vegetation would be dormant and snow covered.

Target and projectile shooting would be prohibited and therefore would have no impacts in these zones.

Alternative 3: The existing county road provides an excellent mode of transport for weed seed species. Vehicle traffic that occurs on this road may spread existing weeds within the area as well as introduce new weed species from outside the Emerald Mt. parcel. Impacts that occur as a result of mountain biking along designated roads and trails would be the same as described above for Alternative 1.

Impacts resulting from camping and shooting sports would not occur under this alternative because these activities are prohibited.

Impacts resulting from horseback riding would be the same as described in Alternative 1, but would be localized to designated roads and trails. The off-trail impacts expected in Alternative 1 would not occur because horseback riding would be limited to designated roads and trails in all zones.

Winter recreation opportunities would have no impact on weed dispersal and invasion because the vegetation would be dormant and snow covered.

Alternative 4: The existing county road provides an excellent mode of transport for weed seed species. Vehicle traffic that occurs on this road may spread existing weeds within the area as well as introduce new weed species from outside the Emerald Mt. parcel. In Zone 1, impacts related to mountain biking along designated roads and trails would be the same as those described above for Alternative 1. Mountain biking is prohibited in Zone 2, thus there would be no impacts.

Impacts resulting from camping and shooting sports would not occur under this alternative because these activities are prohibited.

Impacts resulting from horseback riding would be the same as described above in Alternative 1. The off trail impacts expected in Alternative 1 would not occur.

Winter recreation opportunities would have no impact on weed invasion and dispersal because the vegetation would be dormant and snow covered.

9.5.9 Riparian & Wetland Habitats

Impacts Common to All Alternatives: Livestock grazing on Emerald Mountain has the potential to impact riparian systems. Historic livestock grazing along Cow Creek has degraded riparian habitat by decreasing health and vigor in riparian plants, increasing the abundance of weeds, and impairing hydrological functioning. Riparian Proper Functioning Condition (PFC) was used to evaluate segments of Cow Creek in the summer of 2005. Portions of Cow Creek were rated as Functioning at Risk (FAR) and Proper Functioning Condition. These trends are expected to continue until the expiration of State Land Board issued grazing leases.

When the SLB issued grazing leases expire, the BLM would manage livestock grazing to comply with Colorado Public Land Health Standards under all four alternatives. Under these standards, riparian systems would be managed to provide forage, habitat and biodiversity and maintain proper hydrologic function. Livestock grazing would be expected to have negligible to minor impacts on riparian systems if managed to comply with land health standards.

Impacts to riparian systems resulting from BLM actions in Wildlife, Special Status Species, Weed Management, Ground Water, Forestry and Fire Management programs would be expected to result in neutral to positive impacts. Existing BLM standards in all of these programs are designed to maintain and/or enhance riparian systems. Impacts from specific actions under these programs would be addressed in project-specific environmental assessments or environmental impact statements.

BLM actions relating to Minerals and Energy, Lands and Rights-of-Way programs could result in specific negative impacts to riparian habitats. Mining, drilling, and utility and road maintenance and/or construction would have localized impacts depending upon the type and duration of the activity. Specific impacts would be addressed through project-specific environmental assessments or environmental impact statements.

Recreation activities have some potential to impact riparian systems. These impacts would be similar to recreation impacts in upland vegetation, including trampling and the introduction or dispersal of weeds. Dispersed recreation activities have a greater potential to impact riparian vegetation by creating new trails and erosion problems along or across Cow Creek and other drainages. Roads may cause increased run-off, resulting in increased sedimentation in streams and drainages. Most of these impacts are expected to be minor, and would not threaten riparian system functioning.

9.5.10 Forestry

Impacts Common to All Alternatives: It is unlikely that any of the four alternatives would have major impacts to forestry resources. Only allowing fuel wood and fence post cutting in conjunction with thinning projects would not impact the overall availability of fuel wood because there are ample opportunities to collect fire wood in the area. All alternatives would focus on improving or maintaining forest health and would benefit woodland and forest ecosystems.

9.5.11 Migratory Birds

Impacts Common to All Alternatives: All four alternatives would have a low potential to result in the ‘take’ of any migratory bird. An increased human presence on Emerald Mountain could result in a ‘take’ by illegal shooting. However, illegal shooting is not expected to be a major cause of mortality to migratory birds and would be an isolated occurrence. Some activities allowed under the management plan may result in the accidental destruction of nests. For example, livestock can trample and destroy nests of ground nesting birds. These impacts are expected to be minimal and isolated under all alternatives and would not influence populations of migratory birds on a landscape level.

Range Management, Minerals and Energy programs and Right-of-Way management may have indirect impacts to migratory birds by modifying or degrading habitat. Mining, drilling, and utility and road maintenance and/or construction would have localized impacts depending upon the type and duration of the activity. Specific impacts would be addressed through project-specific environmental assessments or environmental impact statements.

Wildlife, Special Status Species, Forestry, Fire, Weed and Vegetation Management would all have beneficial or neutral impacts to migratory birds. These programs would restore, maintain and/or enhance native plant communities, which provide productive habitats for migratory birds.

Soil, Water Resources, Climate and Air Quality, Noise, Cultural Resources and Paleontology Management would not be expected to have any impacts to migratory birds.

Recreational activities can have impacts on migratory birds. Impacts include nest abandonment, displacement and a change in species composition. Gutzwiller et al. (1998) found an increase in pedestrian activity through breeding territories of forest birds caused nest abandonment and decreased nest attentiveness. Hiking trails may also displace certain species of forest birds. Miller et al. (1998) found that generalist species of songbirds were more abundant than specialized species near hiking trails. All four alternatives would have some impacts to migratory birds, primarily due to an increase in human presence. These impacts are expected to be isolated, and mainly associated with travel corridors. It is unlikely that any alternative would influence populations of migratory birds on a landscape level.

9.5.12 Terrestrial Wildlife

Impacts Common to All Alternatives: Effects of the four alternatives on terrestrial wildlife are evaluated as positive or negative and direct or indirect. Management actions may affect wildlife species in two ways, by causing disturbances or by modifying or impacting habitat.

Livestock grazing on Emerald Mountain has the potential to impact wildlife species and their habitat. The state land board currently permits grazing at a grazing capacity of 6.5 acres per AUM on the parcel with no restrictions on season of use or duration of use. This grazing system has the potential to reduce cover and diversity of grasses, forbs, and shrubs. Excessive losses of vegetation can result in a reduction of cover for hiding and movement, which is important to the survival of wildlife species. This can impact the productivity of small mammals, such as snowshoe hares, rabbits, and squirrels and ultimately impact predators of these species. Other impacts associated with grazing are mainly associated with competition between livestock and wildlife species for available forage.

Upon expiration of the SLB issued grazing leases, the BLM would manage livestock grazing to comply with Colorado Public Land Health Standards under all four alternatives. Under these standards, plant communities would be managed to maintain and/or improve the quality and health of native plant communities. This would benefit wildlife species by providing healthy, productive plant communities that are resilient, diverse and vigorous. During the renewal process, BLM would work with applicants to specify levels and timing of grazing use that would maintain and/or improve forage, soil, wildlife habitat, water quality, and other resources. Livestock grazing would be expected to have negligible to minor impacts on wildlife and wildlife habitat if managed to comply with land health standards.

Forestry and Fire Management described in all alternatives would likely have beneficial impacts to wildlife species and their habitat. Forestry management would focus on maintaining healthy woodland and forest ecosystems, which would provide quality habitat for a variety of forest wildlife species. Fire suppression would be aggressive, reducing potential impacts caused by high intensity fires. All alternatives also allow for prescribed fire and mechanical treatments to improve resource condition and maintain ecosystem health.

Right-of-way management would minimize impacts to wildlife species by requiring rights-of-way to be located in the existing power line corridor or underground. This would limit new disturbances to wildlife habitat and decrease potential impacts to species by locating all ROW in the same location or in previously disturbed areas. Specific impacts would be addressed through project-specific environmental assessments or environmental impact statements.

Wildlife, Special Status Species, and Vegetation Management programs would all have beneficial impacts to terrestrial wildlife species. Existing BLM standards in all of these programs are designed to maintain and/or enhance native plant communities, which provide productive habitats for terrestrial wildlife. Impacts from specific actions under these programs would be addressed in project-specific environmental assessments or environmental impact statements.

Soil, Water Resources, Climate and Air Quality, Cultural Resources and Paleontology Management would not be expected to have any impacts to wildlife or their habitat.

Recreation Management would impact wildlife species in various ways. Proposed recreation activities can impact plant communities, often resulting in degraded wildlife habitats. Recreational activities that are restricted to existing roads and trails can lead to areas of localized soil compaction along roads and trails. Vegetation immediately adjacent to these areas of concentrated human activity can be subject to trampling and weed invasion. Dispersed recreation, such as hiking or horseback riding, would create new trails, increasing fragmentation of wildlife habitat. Most direct impacts to vegetation would be highly localized and unlikely to significantly degrade wildlife habitat on Emerald Mountain.

Direct impacts to wildlife species from recreation vary based on the type of activity and the species involved. Wildlife may react to disturbances with behavioral and/or physiological responses. Behavioral responses include fleeing, avoidance, or interference with basic life needs, such as foraging. Physiological responses are less noticeable and include increased stress, increased heart rate or subtle changes in alertness or posture (Joslin and Youmans, 1999). Both behavioral and physiological responses result in energetic costs and can reduce vigor and animal health. Disturbances may have ramifications that translate to population-level impacts. For example, a disturbance that alters behaviors within a local population, which then results in distribution and habitat use changes, may ultimately alter reproductive success, and therefore the health and status of the populations (Joslin and Youmans, 1999).

An increase in human presence from any recreational activity is likely to stress or disturb wildlife species. Although several wildlife species are able to habituate to frequent or expected disturbances, other species may avoid areas as human use increases. Dispersed recreation can have greater impacts to wildlife because encounters occur at unexpected times and places.

Hiking and biking would likely impact wildlife species by increasing stress, interfering with foraging, or in some cases, causing a flee response. Big game and other wildlife species would likely move away from or avoid trails used for hiking or biking. However, wildlife are not as restricted during the summer when this type of activity would occur and hiking and biking would not be expected to displace wildlife from the Emerald Mountain parcel.

People often bring domestic dogs with them when skiing, snowshoeing or hiking. Domestic dogs can impact wildlife through harassment, displacement, injury or death (Sime, 1999). Domestic dogs often invoke a predator alarm response in wildlife, causing them to flee. This can have severe impacts on wildlife, especially during critical periods such as winter or during reproduction. Domestic dogs can also cause stress or mortality for young that are unable to flee. In addition, domestic dogs can introduce diseases and parasites into the environment.

Winter recreation is likely to have the most adverse impacts on wildlife species. Wildlife, especially big game species, are often restricted to smaller areas during the winter months and may expend high amounts of energy to move through snow, locate food and maintain body temperature. Olliff et al. (1999) discussed the impacts of winter recreation on wildlife species in Yellowstone National Park (YNP). Elk often acclimate to predictable activity, such as skiing or snowshoeing on established trails. However, off-trail skiing in unexpected areas or at unexpected times usually causes elk to flee (Olliff et al. 1999). Elk in YNP fled more often and a greater distance when encountering skiers off established routes than skiers on trails (Aune 1981). This can deplete much-needed energy reserves and repeated disturbances may lead to decreased survival. However, impacts from human disturbance may be less severe when adequate hiding cover is near. Elk may also avoid areas of continual noise or activity, displacing them to adjacent and often lower quality habitat.

Recreation may impact large and mid-sized carnivores due to specialized biological traits such as low population densities, low reproductive rates and large home ranges (Olliff et al. 1999). Foraging behavior may be disrupted along trails and carnivores may be displaced due to human presence and noise. Black bears, coyotes and forest dwelling carnivore species may be impacted in this manner. In the winter, snow compaction may decrease populations of small prey mammals and can increase competition between predators. Packed snow trails can provide a travel corridor for coyotes and other carnivore species into areas that were previously inaccessible. This can have negative consequences to lynx and other high elevation wintering carnivores.

Snow compaction from over-the-snow recreation activities can have impacts to subnivean fauna, which are animals active in winter under the snow. Species of mice, voles and shrews present on Emerald Mountain rely on un-compacted snow for insulation against cold temperatures. The space that forms between the snow and ground also gives subnivean wildlife access to forage, water and potential mates during the winter. When snow is compacted, this space is reduced, often reducing access to forage and water. Snow compaction can also lead to changes in microclimate, including a change in temperature and a decrease in subnivean air space (in Olliff et al. 1999). These changes may lead to a decrease in winter survival of subnivean fauna.

Alternative 1: Alternative 1 would have the greatest potential to impact wildlife species and their habitat. This alternative would allow for a wide variety of mechanized and non-motorized recreational activities over the entire parcel and likely result in localized resource damage. By not designating areas for specific recreational activities, the potential for human and wildlife conflicts is increased.

Snowmobiles would be allowed to travel cross county under this alternative. The Emerald Mountain parcel may be less desirable as a snowmobiling site than the existing snowmobiling areas in the vicinity of Steamboat Springs, so the likelihood of major amounts of snow compaction from heavy concentrations of snowmobile use is low. Snow compaction would have negligible to moderate impacts on populations of mice, voles and shrews, and predators of these species, depending on the level of snowmobile use. Winter snowmobiling activities with a minimum of 12 inches of snow cover would be unlikely to result in significant impacts to plant communities as long as the minimum snow cover is enforced and snowmobiling use is not heavy. Some minor, localized impacts such as crushed vegetation or broken branches may occur, but these impacts would not be significant to plant communities on a landscape level.

Air and noise pollution generated by snowmobiles can have indirect impacts for wildlife species. Snowmobiles can also release high amounts of hydrocarbons and carbon monoxide into the air. Noise and human presence from snowmobiles would disturb wildlife using winter habitat. However, snowmobiles do not appear to be as disruptive to some big game species as skiing or snowshoeing. Freddy et al. (1986) found that mule deer responded more intensely

to people on foot than to snowmobile traffic. Repeated use of the area could also displace elk from winter habitat on public lands onto private land west of Emerald Mountain.

Non-motorized over-the-snow recreation activities, such as cross-country skiing and snowshoeing, would not be restricted to designated routes or zones under this alternative. Although this would cause less snow compaction than snowmobiles, it would lead to some dispersed snow compaction. Dispersed snow compaction increases potential impacts to subnivean wildlife and vegetation. Although skiing and snowshoeing would not be limited to designated routes, it is likely that the same routes would be used once established through the snow. Wildlife would potentially move away from established trails and routes, however, human presence would be expected and predictable along these routes, decreasing potential impacts. Some off-trail skiing and snowshoeing would still be expected on the parcel under this alternative. The unpredictable nature of off-trail skiing and snowshoeing has the potential to create disturbances and stress wildlife, especially elk using winter habitat.

Hiking, biking and horseback riding would likely impact wildlife species by increasing stress, interfering with foraging, or in some cases, causing a flee response. Impacts from mountain biking would be minimized by designating trails, decreasing the area of influence for this disturbance. Hiking and horseback riding would not be restricted to designated routes, and this may increase impacts to wildlife species. However, these activities would likely occur in the summer and fall months, when big game and other wildlife species can exist in a wider array of habitats and are not under as much stress as in the winter months. Domestic dogs accompanying hikers could potentially harass, injure, or even kill wildlife species. Under this alternative, domestic dogs would be allowed on the entire parcel and not be required to be on leash. This may cause conflicts with elk using calving habitat. Dogs can increase stress in young or pregnant elk and could potentially injure or kill elk calves.

Dispersed camping and shooting sports would be allowed over the entire parcel under this alternative. Both activities could potentially disturb wildlife species by an increase in human presence and associated noise. Dispersed camping may result in resource damage, however this impact would be localized and unlikely to threaten ecosystem health.

Impacts to wildlife species from oil and gas development are discussed in the Colorado Oil and Gas EIS (1991). Impacts include, but are not limited to, displacement into less suitable habitat, increased stress and loss of habitat. Although the 1991 Colorado Oil and Gas EIS provides stipulations to protect wildlife species during critical times of the year, it is difficult to protect habitat from degradation and fragmentation when allowing for energy development. Best management practices would be applied in an effort to minimize these impacts. Since the potential for energy development is low, most impacts would be localized and unlikely to cause major impacts over the entire parcel.

Alternative 2: This alternative would have a lower potential to impact wildlife species and their habitat when compared to Alternative 1. This alternative would allow for a variety of mechanized and non-motorized recreational activities in designated areas. By designating areas and trails for specific uses, potential impacts to wildlife species and their habitat can be minimized, while still providing a wide range of recreational opportunities.

Alternative 2 would minimize dispersed snow compaction by not allowing snowmobiling on the parcel. This would limit the amount of snow compaction, decreasing potential impacts to subnivean wildlife species and vegetation. This alternative may also limit snow compaction from Nordic skiing and snowshoeing by designating different objectives in the two zones. Although these activities would be allowed in both zones, concentration of skiing and snowshoeing would be encouraged in RMZ 1. Although skiing and snowshoeing would not be limited to designated routes, it is likely that the same routes would be used once established through the snow. Wildlife would potentially move away from established trails and routes, however, human presence would be expected and predictable along these routes, decreasing

potential impacts. Some off-trail skiing and snowshoeing would still be expected under this alternative. The unpredictable nature of off-trail skiing and snowshoeing has the potential to create disturbances and stress wildlife, especially elk using winter habitat.

Impacts from dispersed hiking and horseback riding (associated with hunting) would be similar to impacts described above for Alternative 1. Impacts from domestic dogs would be decreased as all dogs would be required to be on leashes. This would decrease potential harassment of elk cows and calves on the parcel.

Initially, there would not be any impacts to wildlife from mechanized recreation under this alternative. Once routes for mountain biking are established, impacts would be similar to those described in Alternative 1, but are expected to be minimized by the creation of the two management zones. Detailed analysis of designated trails would be conducted in a separate environmental document.

There would be no impacts from camping or shooting sports under this alternative.

Alternative 3: This alternative would have similar impacts to those described for Alternative 2. Alternative 3 would allow for a variety of mechanized and non-motorized recreational activities in designated areas. By designating routes for specific uses, potential impacts to wildlife species and their habitat can be minimized, while still providing a wide range of recreational opportunities.

Impacts associated with hiking, mountain biking, cross country skiing, snowshoeing and horseback riding would be similar to impacts described for Alternatives 1 and 2. This alternative would minimize impacts to wildlife species and habitat by restricting all activities to designated routes and trails. Alternative 3 would allow for the least amount of dispersed snow compaction.

There would be no impacts from snowmobiles, camping or shooting sports under this alternative.

Alternative 4: This alternative would have similar impacts as described above for Alternatives 2 and 3. This alternative would allow for a variety of mechanized and non-motorized recreational activities in designated areas. By designating areas and trails for specific uses, potential impacts to wildlife species and their habitat can be minimized, while still providing a wide range of recreational opportunities.

Alternative 4 would minimize dispersed snow compaction by not allowing snowmobiling on the parcel. This would limit the amount of snow compaction, decreasing potential impacts to subnivean wildlife species and vegetation. This alternative may also limit snow compaction from Nordic skiing and snowshoeing by designating different objectives in the two zones. Although these activities would be allowed in both zones, concentration of skiing and snowshoeing would be encouraged in RMZ , which would encompass a smaller area than in Alternative 2. Although skiing and snowshoeing would not be limited to designated routes, it is likely that the same routes would be used once established through the snow. Wildlife would potentially move away from established trails and routes, however, human presence would be expected and predictable along these routes, decreasing potential impacts. Some off-trail skiing and snowshoeing would still be expected under this alternative. The unpredictable nature of off-trail skiing and snowshoeing has the potential to create disturbances and stress wildlife, especially elk using winter habitat.

Impacts from dispersed hiking and horseback riding (associated with hunting) would be similar to impacts described above for Alternative 1. Impacts from domestic dogs would be decreased as all dogs would be required to be on leashes. This would decrease potential harassment of elk cows and calves on the parcel.

Initially, there would not be any impacts from mechanized recreation under this alternative. Once routes for mountain biking are established, impacts would be similar to those described in Alternative 1, but are expected to be minimized by the creation of the two management zones. Detailed analysis of designated trails would be conducted in a separate environmental document.

There would be no impacts from camping or shooting sports under this alternative.

9.5.13 Aquatic Wildlife

Impacts Common to All Alternatives: Livestock grazing can impact aquatic wildlife by degrading riparian habitats. Livestock can congregate in riparian areas, trampling vegetation and increasing the potential for erosion along wet stream banks. Livestock can directly impact aquatic wildlife, such as leopard frogs, by injury or death from trampling. If livestock grazing is managed in an appropriate manner, it can have a neutral to positive impacts to riparian systems. Under all four alternatives, livestock grazing would be managed to comply with Colorado Public Land Health Standards. Under these standards, riparian systems would be managed to provide productive habitat for aquatic wildlife species. Allowing continued livestock grazing on Emerald Mountain would have negligible to moderate impacts on aquatic wildlife species.

BLM actions in Wildlife, Special Status Species, Weed Management, Ground Water, Forestry, and Fire Management programs are expected to result in neutral to positive impacts to aquatic wildlife and their habitat. Existing BLM standards in all of these programs are designed to maintain and/or enhance riparian systems. Impacts from specific actions under these programs would be addressed in project-specific environmental assessments or environmental impact statements.

BLM actions under Minerals and Energy, Lands and Rights-of-Way programs could result in specific negative impacts to riparian habitats and aquatic wildlife. Mining, drilling, and utility and road maintenance and/or construction would have localized impacts depending upon the type and duration of the activity. Specific impacts would be addressed through project-specific environmental assessments or environmental impact statements.

Soil, Climate and Air Quality, Cultural Resources and Paleontology Management would not be expected to have any impacts to aquatic wildlife or their habitat.

Recreation activities have some potential to impact aquatic wildlife species and riparian habitat. Amphibian species are declining worldwide and direct and indirect impacts from recreational activities may be contributing to this decline (Joslin and Youmans 1999). Impacts to aquatic wildlife habitat from mountain biking, hiking, camping and horseback riding may include trampling of vegetation, introduction or dispersal of weeds, increased erosion, and increased sedimentation in streams and drainages. Snowmobiles may directly emit unspent fuel and oil into the environment, which contaminate water. Since riparian habitat is limited on Emerald Mountain, and recreation activities would be dispersed over the parcel under all alternatives, most of the above mentioned impacts to aquatic wildlife would be localized and short-term. Recreation would not be expected to create significant impacts to aquatic wildlife or riparian habitat.

9.5.14 Sensitive Species

Impacts Common to All Alternatives: Livestock grazing on Emerald Mountain has the potential to impact sensitive species and their habitat. The state land board currently permits grazing at a grazing capacity of 6.5 acres per AUM on the parcel with no restrictions on season of use or duration of use. This grazing system has the potential to reduce cover and the diversity of grasses, forbs, and shrubs. Excessive losses of vegetation can result in a reduction in cover for used for hiding and movement, which is important to the survival of small mammals and can

ultimately impact raptor species that prey on them. Livestock grazing can potentially impact grouse nesting habitat by reducing grass cover essential for camouflaging nest sites. Livestock could also destroy grouse nests by trampling.

Upon expiration of the SLB issued grazing leases, BLM would manage livestock grazing to comply with Colorado Public Land Health Standards under all four alternatives. Under these standards, plant communities would be managed to maintain and/or improve the quality and health of native plant communities. This would benefit sensitive species by providing healthy, productive plant communities that are resilient, diverse and vigorous. During the renewal process, BLM would work with applicants to specify amounts and timing of grazing use that would maintain and/or improve forage, soil, wildlife habitat, water quality, and other resources. Livestock grazing is expected to have negligible to minor impacts on sensitive species and their habitat if managed to comply with land health standards.

Forestry and Fire Management described in all alternatives would likely have beneficial impacts to sensitive species. Forestry management would focus on maintaining healthy woodland and forest ecosystems, which would provide quality habitat for northern goshawk. Fire suppression would be aggressive, reducing potential impacts caused by high intensity fires. All alternatives also allow for prescribed fire and mechanical treatments to improve resource condition and maintain ecosystem health.

Right-of-way management would minimize impacts to special status species by requiring new rights-of-way to be located in the existing power line corridor or underground. This would limit new disturbances to habitat and decrease potential impacts to raptor species from power lines. Specific impacts would be addressed through project-specific environmental assessments or environmental impact statements.

Wildlife, Special Status Species, and Vegetation/Weed Management programs would all have beneficial impacts to special status species. Existing BLM standards in all of these programs are designed to maintain and/or enhance native plant communities, which provide productive habitats for special status species. Impacts from specific actions under these programs would be addressed in project-specific environmental assessments or environmental impact statements.

Soil, Water Resources, Climate and Air Quality, Cultural Resources and Paleontology Management would not be expected to have any impacts to sensitive species.

Impacts to sensitive species from recreational activities would be similar to impacts described in the terrestrial wildlife section of this EA. Impacts to habitat include trampling of vegetation, soil compaction, fragmentation, and introduction or dispersal of weeds along travel corridors. An increase in human presence from any recreational activity is likely to stress or disturb sensitive species. Noise and increased human activity along travel corridors can have negative impacts to raptor species during the breeding season. Although no raptor nests were found during wildlife surveys, suitable habitat for both ferruginous hawk and goshawk nesting exists on the parcel. Repeated disturbances from pedestrian activities, mountain biking and horseback riding in the vicinity of nests may lead to decreased nest attendance, nest abandonment, and injury or death of young. Potential impacts to nesting raptors would be similar for all four alternatives. Repeated harassment by wildlife viewers or photographers would disrupt breeding and nesting behaviors in both raptor species.

Winter recreation activities under all alternatives could potentially disturb Columbian sharp-tailed grouse utilizing winter habitat on Emerald Mountain. However, Alternative 1, which allows for snowmobile use, would have the greatest potential to impact wintering sharp-tailed grouse because motorized recreation has the ability to influence a greater area than non-motorized recreation. Dispersed camping and shooting sports allowed under this alternative could potentially disturb raptor and grouse species due to an increase in human presence and

associated noise. Dispersed camping may result in resource damage; however this impact would be localized and would be unlikely to severely degrade sensitive species habitat.

Alternative 1 would allow for oil and gas exploration and development. Impacts to raptor and grouse species from oil and gas development are discussed in the Colorado Oil and Gas EIS (1991). Impacts include, but are not limited to, nest abandonment, decreased nest attendance, and elimination of essential habitat components. Disturbance from oil and gas activities during critical periods, such as nesting, may displace raptors to less suitable nesting habitat, or result in the mortality of young from nest abandonment or decreased nest attendance. Noise and human presence related to drilling can disrupt breeding and nesting in grouse species (Connelly et al. 2004). Drilling activities may also lead to accidental nest destruction, nest and lek abandonment, and displacement into less suitable habitat. Although the 1991 Colorado Oil and Gas EIS includes stipulations to protect grouse and raptor species during critical times of the year, it is difficult to fully protect habitat from degradation and fragmentation when allowing for energy development. Best Management Practices would be applied in an effort to minimize these impacts. Since the potential for energy development is low, most impacts would be localized and unlikely to cause major impacts over the entire parcel.

9.5.15 Threatened & Endangered Species

Canada Lynx

Section 7 consultation would be conducted with the US Fish and Wildlife Service on effects of the Management Plan to Canada Lynx. The section that follows describes the types of impacts expected to occur by allowing certain activities on Emerald Mountain. Specific impacts to lynx would be evaluated at the project level (such as grazing permit renewals, hazardous fuels reduction projects) and a separate consultation is required for any project in lynx habitat that may affect the species.

There would be no impacts to Canada lynx from Soil, Climate and Air Quality, Water Resources, Cultural or Paleontology Resource Management.

Wildlife, Special Status Species and Vegetation/Weed Management programs would all have beneficial impacts to Canada lynx. Existing BLM standards in all of these programs are designed to maintain and/or enhance threatened and endangered species habitat. Impacts from specific actions under these programs would be addressed in project-specific environmental assessments.

Activities associated with Rangeland Management, Lands/Right of Ways, Mineral/Energy, Recreation, Forestry and Fire Management Programs may have impacts to Canada lynx or their habitat on Emerald Mountain.

Livestock grazing would not result in direct mortality of individual lynx and any effects to lynx from grazing would be the result of changes in ecosystem structure. Excessive losses of forage could result in a reduction in hiding and movement cover and directly effect lynx's ability to move through the landscape. The greatest potential for these effects exists within riparian areas, specifically Cow Creek. Grazing in riparian areas could remove vegetation cover, affecting the cover values of riparian areas that may be used as travel corridors by lynx.

Other impacts associated with grazing are mainly associated with competition between livestock and potential lynx prey species for available forage. The Lynx Conservation Assessment and Strategy identified that "grazing, in conjunction with increasing elk populations, may have resulted in increased competition for forage resources with lynx prey". In summary, livestock compete with lynx prey species (snowshoe hare, jack rabbits, cottontails, blue grouse, voles, squirrels) for available forage. In addition, livestock can remove cover important to the survival of prey species, which could ultimately result in lower prey species productivity.

The state land board currently permits grazing at a grazing capacity of 6.5 acres per AUM on the parcel with no restrictions on season of use or duration of use. This grazing system has the potential to reduce cover and the diversity of grasses, forbs, and shrubs. Upon expiration of the SLB issued grazing leases, BLM would manage livestock grazing to comply with Colorado Public Land Health Standards under all four alternatives. Under these standards, plant communities and riparian areas would be managed to maintain and/or improve the quality and health of native plant communities. These standards should minimize potential impacts to lynx and their habitat from livestock grazing.

Right-of-way actions may result in short and long term habitat modification resulting from vegetation clearing and construction of access roads, pipelines, and electrical transmission lines. Permanent habitat conversion occurs on access roads and utility corridors maintained within ROWs. ROW management under all alternatives would minimize impacts to lynx habitat by requiring new rights-of-way to be located in the existing power line corridor or underground. This would limit new disturbances to habitat and decrease potential impacts to lynx habitat.

Fire management activities on Emerald Mountain may have impacts to lynx and their habitat. Wildland fires would be suppressed on Emerald Mountain due to its proximity to Steamboat Springs. The potential construction of mechanical fire lines within lynx habitat could remove vegetation, reduce and fragment habitat, open areas up to competitive species and interfere with movement through habitat. The construction of mechanical fire lines, could allow for access into lynx habitat by competing species and by the recreating public. This could reduce the quality and usability of winter foraging habitats.

Fire management activities on Emerald Mountain may result in changes in forest canopy and understory cover and composition. Hazardous fuel reduction treatments could potentially result in reduction of cover values and prey densities for lynx. Treatments could removal dense understory utilized by snowshoe hares, and destruction of coarse woody material on the forest floor (a necessary component of lynx denning habitat). Prescribed fire may be useful for lynx and other wildlife habitat improvement. Although fire may result in short term decreases in habitat suitability for lynx and their prey due to reduced cover, long term benefits of fire may include increases in the extent of early successional forest stands on burned areas and on sites where fire creates smaller openings in the forest canopy, resulting in increased availability of forage for lynx prey.

Forestry management would focus on maintaining healthy woodland and forest ecosystems, which would provide quality habitat for a variety of forest wildlife species. Forestry management would have minor negative impacts to lynx habitat as tree cutting would not be allowed unless in conjunction with fuels projects or trail development and maintenance.

Recreation management may have some impacts to lynx. A variety of factors, such as the time of year, the time of day and frequency of the activity may influence the effects of recreation on lynx. Staples (1995) described lynx as being generally tolerant of humans. “Other anecdotal reports also suggest that lynx are not displaced by human presence, including moderate levels of snowmobile traffic (Mowat et al. 2000, J. Squires pers. comm. 1999, G. Byrne pers. comm.. 1999). Anecdotal information (Roe et al. 1999, J. Squires pers. comm. 1999, G. Byrne pers. comm.. 1999) suggest that individual lynx behave differently in response to the presence of humans and their associated activities, depending on the environment setting where the interaction occurred. Intuitively we assume that some threshold exists where human disturbance becomes so intense that it precludes use of an area by lynx” (Ruediger et al. 2000). Dispersed recreation activities, such as hiking, mountain biking and horseback riding, that occur in the summer daylight hours would be unlikely to disturb lynx utilizing habitat on Emerald Mountain. Dispersed camping allowed under Alternative 1 could potentially disturb lynx, as humans would be present on the parcel when lynx are active. However, it is unlikely

that camping would be at an intensity high enough to displace lynx from the parcel or to prevent lynx movement though habitat.

Winter recreational use has the greatest potential to impact lynx use of habitat on the parcel. Winter use of snowmobiles and pedestrian trails in and near lynx habitat may create travel corridors for coyotes and bobcats into areas where deep snow would normally preclude these species. The presence of these species in lynx habitat may result in interference competition, direct competition for prey, or even mortality of lynx as a result of predation. Alternative 1, which allows for snowmobile use, would have the great potential to impact lynx from dispersed snow compaction. Even light use of the area by snowmobiles could result in compacted travel corridors for lynx competitors. Cross-country skiing and snowshoeing would also result in snow compaction corridors, but to a lesser degree than motorized use.

Exploration and development of petroleum resources, as allowed in Alternative 1, may result in short and long term habitat loss or modification due to clearing of vegetation and construction of access roads, production facilities, and utilities. Habitat quality near oil and gas production wells are affected by increased levels of human activities and vehicular traffic. Potential impacts of oil and gas leasing include direct habitat loss and localized reduction in habitat capacity for lynx & lynx prey. Best management practices would be applied in an effort to minimize these impacts. Since the potential for energy development is low, most impacts would be localized and unlikely to cause major impacts over the entire parcel.

9.5.16 Cultural Resources

Impacts Common to All Alternatives: Regardless of which alternative is selected, management measures are in place that identify, evaluate and protect cultural resources for present and future generations (State Protocol Agreement between the Colorado State Director of the Bureau of Land Management (BLM) and the Colorado State Historic Preservation Officer (SHPO)).

Activity plans developed for the selected management alternative would directly address the level of physical development and human presence that would take place within the project area. These plans would address cultural resource survey, identification, and protection in a case-by-case analysis of the proposed project. Mitigation of impacts to cultural resources would range from project avoidance to research design guided cultural data recovery excavations.

The discussed alternatives 1 to 4 would, by management design and location, increase year-round visitation and recreational use of Emerald Mountain. This would constitute the greatest threat to cultural resources. Those projects directly related to construction, or designation of specific areas for certain activities, would require appropriate cultural resource Section 106 processes to be conducted.

9.5.17 Paleontological Resources

Alternative 1: Impacts resulting from energy and mineral development could be localized and would be negligible. In most cases, oil and gas activity can avoid paleontological sites and have a negligible impact. Impacted sites can be mitigated, in part, by saving fossils where possible. The potential for impacts is considered low due to the low mineral development potential.

Alternatives 2, 3 and 4: Paleontological resources under these alternatives would be managed according to existing laws, regulations, and other authorities under the guidance of the BLM 8270 Manual and Handbook for the Management of Paleontological Resources, and pertaining scientific collections handled as per DM411 for the Management of Museum Properties.

Using current BLM management practices would not change levels of ongoing impacts on paleontological resources. These resources would be managed under existing laws,

regulations, and related guidance as outlined in the BLM 8270 Manual and Handbook for the Management of Paleontological Resources. Scientific collections would be handled as per DM 411 for the Management of Museum Properties.

9.5.18 Economics

Impacts Common to All Alternatives: Under all alternatives, one of the primary factors influencing visitor use on Emerald Mountain would be local and state population growth. Population growth in Steamboat Springs and the surrounding Yampa Valley would bring about increased recreation use on public lands.

BLM management of the Emerald Mountain parcel would provide an increase in recreational opportunities for the public. It is unlikely that Emerald Mountain would bring significant additional income to Steamboat Springs, due to the number of recreational opportunities already available. Local residents would likely be the most frequent users of this area.

9.5.19 Environmental Justice

Impacts Common to All Alternatives: As required by Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," federal agencies are asked to consider the composition of an affected area to determine whether minority populations, low-income populations, or Native American tribes are affected by actions proposed by that agency and whether there would be disproportionately high and adverse human health or environmental effects on these populations.

None of the proposed management alternatives contain actions that would singly or jointly have an adverse impact on minorities, low-income, or Native American populations. No sacred sites have been identified within the planning area, and consultation with all affected Native American tribes was initiated early on in the planning process. None of the proposed management alternatives would result in adverse human health impact. While some of the actions proposed within alternatives may have slight direct and indirect impacts to the environment, for example trail construction, there would not be any significant, long-term impact associated with any proposed management alternatives. Consequently, management actions resulting from the implementation of the Little Snake Plan Amendment would not cause disproportionate adverse impacts to minority populations, low-income populations, or Native Americans.

9.5.20 Recreation Management

Alternative 1: Minerals leasing and development would have minor to major, long-term negative impacts on recreation resources and activities. Depending on the location, timing, extent and duration of the project, roads, trails, campgrounds, and other developed recreation facilities might require relocation or could be eliminated. Recreation activities such as hunting, hiking, mountain biking, and nature watching would be discouraged or displaced due to equipment routing, noise, pollution, loss of scenery or other disturbances.

Realty impacts would be similar to those described above for minerals. Negative impacts to recreation would occur depending on location, timing, extent and duration of project development. Most disturbances would be transitory during development phases and generally result in minor negative long-term effects. Wind and solar sites, if developed, would have a moderate negative impact.

Wildlife and wildlife habitat management impacts would potentially affect recreation activities and facility development. These are considered to be moderate positive impacts in that almost all recreation benefits from the presence wildlife and wildlife viewing opportunities. Possible seasonal closures to motorized/mechanized use would have a minor negative impact on these users and a moderate positive effect in enhanced pedestrian wildlife viewing opportunities. Long-term impacts would be positive.

Overall, range management impacts on recreation would be negligible. Public attitudes about cattle on public lands vary. Some recreation users have concerns with the presence of cattle and associated fecal materials on trails. There may be some localized, very minor negative impacts based on these perceptions. Other users may be interested in observing and learning about ranching operations and this would have minor positive effects.

Fire management impacts would be generally positive. Control and management of fire would help preserve tree, shrub, forb and grass conditions which are aesthetically pleasing to the majority of recreational users. It would also help protect recreation facilities.

Cultural resource and paleontological management impacts would be negligible.

Recreation management in this alternative would have a negligible to minor positive impact on recreational users due to the ERMA designation. Only basic custodial recreation opportunities and services are provided. The focus of management as an ERMA is not on recreation, it is on other resources. Recreational activities under this alternative offer the widest range and variety of opportunities with the lowest levels of management and administrative support in comparison to the other alternatives.

Visitor use is expected to increase from the current level of a few hunters to several hundred or more participants annually in a variety of recreational activities. Visitor use under this alternative is anticipated to be the highest of the four alternatives.

Recreation implementation action impacts under this alternative are as follows: Dogs off leash, even if under voice control, may disturb or create safety issues for other recreation users. Camping without restrictions would result in minor to moderate negative impacts due to litter, sanitation, and possible fire hazards. Open hunting and shooting sports, although producing a positive outcome to the participants, could result in disturbance and safety issues to other users. Designation of no-hunting safety zones would help to mitigate negative impacts from hunting. Without limits on hunting and designated motorized access, moderate negative impacts would occur because there would be too many hunters for acceptable success rates and potential user conflicts.

Travel Management impacts would be moderately positive because mechanized use would be limited to designated roads and trails. Minor negative user conflicts and damage to recreation resources would occur. Restricting mechanized uses to designated routes would help to limit impacts to other recreational users. The absence of motorized use in this alternative would result no noise, air pollution, or safety issues. This would be a major positive benefit to non-motorized recreational users.
Snowmobile uses would be positive for the participants and result in minor negative impacts to non-motorized winter users because of noise, air pollution, and social conflicts. The impacts of specific travel route designations would be analyzed in the TMP EA.

Visual resource management (VRM) impacts would be positive because only low levels of landscape change would be allowed.

Alternative 2: For all zones**:** Minerals leasing and development would have negligible impacts on recreation because the area is closed to mineral development, with the exception of limited sand and gravel development for maintenance or improvement of designated roads and trails. There is no potential identified for sand and gravel. However, impacts would most likely be moderate and localized if developed in the future.

Realty impacts from acquisitions in the area, depending on size and location, would have minor to major long-term negative impacts. Rights-of-way are processed on a case-by-case basis and are subject to other resource constraints. Development of utility lines located along the existing power line or underground would have minor to moderate short-term and minor long-

term effects. Most disturbances would be transitory during development phases and generally minimal over the long term.

Wildlife and wildlife habitat management would have negligible or minor short-term negative impacts depending on the location, extent, and nature of the projects. Long-term impacts would be positive because almost all recreation benefits from the presence wildlife and wildlife viewing opportunities. Environmental and outdoor education opportunities would be enhanced through wildlife management projects and partnerships.

Range management would have negligible or possibly minor negative overall impacts on recreation. Public attitudes about cattle on public lands vary. Some recreation users have issues with the presence of cattle and associated fecal materials on trails. There may be some very minor localized negative impacts based on these perceptions. Other users may be interested in observing and learning about ranching operations and this would have a minor positive effect.

Fire management impacts would be positive. Control and management of fire would help preserve tree, shrub, forb and grass conditions which are aesthetically pleasing to the majority of recreational users. It would also help protect recreation facilities.

Cultural resource and paleontological management impacts would be negligible.

Recreation management impacts under this alternative would have a major positive impact on recreation resources overall. The SRMA designation with specific market strategies, niches, objectives, and setting characters for each SRMA and Zone produces recreation products tailored to these areas. Intensive recreation management is an inherent aspect of an SRMA designation along with substantial investments in facilities.

Visitor use is expected to increase from the current level of a few hunters to several hundred or more participants annually in a variety of recreational activities. Visitor use under this alternative is anticipated to be the second highest of the four alternatives because the SRMA marketing objectives. Special Recreation Permits impacts would be negligible because they are evaluated and issued on a case by case basis and would be limited if necessary.

Interim recreation management impacts (until the RAMP is completed) are as follows: There would be short term minor negative impacts from limiting access to human pedestrian travel, and game hunting by foot or horseback. Other users would not have recreational access to the area and may therefore feel deprived. However, they do not have access to the area now so impacts would be limited to perception rather than actuality. Limiting dogs to leash only would have minor positive impacts on other recreational users in the area.

Long term Recreation Management would have a major positive impacts under this alternative because all management actions are intended to provide and sustain the setting character for the desired objectives. Implementation actions to achieve these results would be determined in the RAMP through collaborative planning with community partners.

Travel Management impacts would be moderately positive because mechanized use would be limited to designated roads and trails. Minor negative user conflicts and damage to recreation resources would occur. Restricting mechanized uses to designated routes would help to limit impacts to other recreational users. The absence of motorized use in this alternative would result no noise, air pollution, or safety issues. This would be a major positive benefit to non-motorized recreational users.
The impacts of specific travel route designations would be analyzed in the TMP EA. Interim travel management impacts are limited to foot and horseback travel only. These impacts would be negligible.

Visual resource management (VRM) impacts would be positive because only low levels of landscape change would be allowed.

North SRMA: Zone 1: The primary emphasis in this Zone is to enhance opportunities for mountain biking and Nordic skiing for visitors and local residents of the Steamboat Springs area. This would have a major positive impact on these and similar muscle powered activities because prescribed setting character and activity planning framework would be created and maintained. Use levels in this Zone are expected to be comparable to adjacent trail areas on Howelsen Hill which is managed by the City of Steamboat Springs.

Natural Resource Recreation Settings would be affected as follows: Physical Classes would remain Middle and Front country; Social Classes would change from Primitive to Middle Country; and Administrative Classes would remain Middle and Front Country.

South SRMA: Zone 2: The primary emphasis in this Zone is for self-guided outdoor adventure and nature studies for local area residents. This would have a moderate positive impact on these and similar activities because prescribed setting character and corresponding opportunities and benefits would be created and maintained. Use levels in this Zone are expected to be comparable to undeveloped USFS areas on Rabbit Ears Pass.

Natural Resource Recreation Settings would be affected as follows: Physical Classes would remain Front and Middle Country; Social Classes would remain Primitive; and Administrative Classes would remain Front and Middle Country.

Alternative 3: Minerals leasing and development would have negligible impacts on recreation because the area is closed to mineral development, with the exception of limited sand and gravel development for maintenance or improvement of designated roads and trails. There is no potential identified for sand and gravel. However, impacts would most likely be moderate and localized if developed in the future.

Realty impacts from acquisitions in the area, depending on size and location, would have a minor to major long-term negative impact. Rights of way are processed on a case-by-case basis and are subject to other resource constraints. Utility lines located along the existing power line or underground would have most likely have minor to moderate short-term and minor long-term effects. Most disturbances would be transitory during development phases and generally minimal long-term.

Wildlife and wildlife habitat management would have negligible or minor short-term negative impacts depending on the location, extent, and nature of the projects. Long-term impacts would be positive because almost all recreation benefits from the presence wildlife and wildlife viewing opportunities. Environmental and outdoor education opportunities would be enhanced through wildlife management projects and partnerships. Possible seasonal closures and/or location of trails and other facilities to minimize disturbance to wildlife would have a minor localized negative impact on some trail users and would result in a moderate positive effect on wildlife viewing opportunities. However, most of the critical wildlife area would be open only to hunting activities. Overall long-term impacts would be positive for recreation users.

Range management would have negligible or possibly minor negative overall impacts on recreation. Public attitudes about cattle on public lands vary. Some recreation users have issues with the presence of cattle and associated fecal materials on trails. There may be some very minor localized negative impacts based on these perceptions. Other users may be interested in observing and learning about ranching operations and this would have minor positive effects.

Fire management impacts would be generally positive over the long term. Control and management of fire would help preserve tree, shrub, forb and grass conditions which are

aesthetically pleasing to the majority of recreational users. It would also help protect recreation facilities. Fire management operations would have minor short term impacts on the aesthetic perceptions of some recreational users.

Cultural resource and paleontological management impacts would be negligible.

Recreation impacts of this alternative would have a minor positive impact on recreational users because of the ERMA designation. Only basic custodial recreation opportunities and services are provided. The focus of management as an ERMA is not on recreation, it is on wildlife conservation and ranching operations in this alternative. Recreational activities under this alternative offer the narrowest range and variety of opportunities. Recreational use under this alternative is limited to day use non-motorized activities only with mechanized uses limited to designated roads and trails.

Visitor use is expected to increase from the current level of a few hunters to several hundred or more participants annually in a variety of recreational activities. Visitor use in this alternative is anticipated to be the lowest of the four because it is limited to the two recreation corridors and hunting activities. Special Recreation Permits impacts would be negligible because they are evaluated and issued on a case by case basis and would be limited if necessary.

Recreation implementation action impacts under this alternative are as follows: Limitations for dogs, camping, hunting safety zones and shooting sports would have moderate positive impacts on other users because of reduced conflicts. Minor negative impacts would result from limiting most recreational activities to designated use corridors. User conflicts and damage to recreation resources would intensify in these areas as a result. Authorized recreational activities would produce positive benefits and experiences for those users. Mountain biking and Nordic skiing would result in moderate positive effects for those users and minor conflicts with other users

Travel Management impacts would be moderately positive because mechanized use would be limited to designated roads and trails. Minor negative user conflicts and damage to recreation resources would occur. Restricting mechanized uses to designated routes would help to limit impacts to other recreational users. The absence of motorized use in this alternative would result no noise, air pollution, or safety issues. This would be a major positive benefit to non-motorized recreational users.

Visual resource management (VRM) impacts would be positive because only low levels of landscape change would be allowed.

Alternative 4: All Zones: Minerals leasing and development would have no impacts because the area is closed to these uses.

Realty impacts from acquisitions to the area, depending on size and location, would have a minor to major long term impact. Rights of way are processed on a case-by-case basis and are subject to other resource constraints. Utility lines located along the existing power line or underground would most likely have minor to moderate short-term and minor long-term effects. Most disturbances would be transitory during development phases and generally minimal over the long term.

Wildlife and wildlife habitat management impacts would potentially limit the extent, nature, and timing of recreation activities and facility development. These are considered to be moderate positive impacts in that almost all recreation benefits from the presence wildlife and wildlife viewing opportunities. Possible seasonal closures and/or location of trails and other facilities to minimize disturbance of wildlife would have a minor localized negative impact on some trail users and would result in a moderate positive effect on wildlife viewing opportunities. Overall long-term impacts would be positive.

Range management would have negligible or possibly minor negative overall impacts on recreation. Public attitudes about cattle on public lands vary. Some recreation users have issues with the presence of cattle and associated fecal materials on trails. There may be some very minor localized negative impacts based on these perceptions. Other users may be interested in observing and learning about ranching operations and this would have minor positive effects.

Fire management impacts would be positive. Control and management of fire would help preserve tree, shrub, forbs and grass conditions which are aesthetically pleasing to the majority of recreational users. It would also help protect recreation facilities.

Cultural resource and paleontological management impacts would be negligible.

Recreation management impacts under this alternative would have a minor positive impact on recreation resources overall. The SRMA designation with specific market strategies, niches, objectives, and setting characters for each SRMA and Zone produces recreation products tailored to these areas. Intensive recreation management is an inherent aspect of an SRMA designation along with substantial investments in facilities. This alternative provides only minor positive benefits in terms of non-motorized recreational opportunities because of the limited variety of management objectives. It provides moderate positive benefits in the partnering opportunities inherent in the development of the subsequent RAMP and TMP.

Visitor use is expected to increase from the current level of a few hunters to several hundred or more participants annually in a variety of recreational activities. Visitor use in this alternative is anticipated to be the third highest of the four because the SRMA marketing objectives. Special Recreation Permits impacts would be negligible because they are evaluated and issued on a case by case basis and would be limited if necessary.

Interim recreation management impacts (until the RAMP is completed) are as follows: There would be short term minor negative impacts from limiting access to human pedestrian travel, and game hunting by foot or horseback. Other users would not have recreational access to the area and may therefore feel deprived. However, they do not have access to the area now so impacts would be limited to perception rather than actuality. Limiting dogs to leash only would have minor positive impacts on other recreational users in the area.

Long term Recreation Management would have a minor positive impacts under this alternative because all management actions are intended to provide and sustain the setting character for the desired objectives. Implementation actions to achieve these results would be determined in the RAMP through collaborative planning with community partners.

Travel Management impacts would be moderately positive because mechanized use would be limited to designated roads and trails. Minor negative user conflicts and damage to recreation resources would occur. Restricting mechanized uses to designated routes would help to limit impacts to other recreational users. The absence of motorized use in this alternative would result no noise, air pollution, or safety issues. This would be a major positive benefit to non-motorized recreational users. The impacts of specific travel route designations would be analyzed in the TMP EA. Interim travel management impacts are limited to foot and horseback travel only. These impacts would be minor.

Visual resource management (VRM) impacts would be positive because only low levels of landscape change would be allowed.

Zone 1: The primary emphasis in this Zone is to enhance opportunities for mountain biking and Nordic skiing for local residents of the Steamboat Springs area. This would have a moderate positive impact on these and similar muscle powered activities because prescribed

setting character and activity planning framework would be attained with the help of community partners. Use levels in this Zone are expected to be comparable to adjacent areas of Howelsen Hill which are managed by the City of Steamboat Springs. This area is smaller than Zone 1 in Alternative 2, therefore the positive impacts are more limited.

Natural Resource Recreation Settings would be affected as follows: Physical Classes would remain Front and Middle Country; Social Classes would change from Primitive to Backcountry; and Administrative Classes would remain Middle Country.

Zone 2: The primary emphasis in this Zone is for self-guided outdoor adventure and nature studies for local area residents. This would have a moderate positive impact on these and similar activities because prescribed setting character and corresponding opportunities and benefits would be created and maintained. Use levels in this Zone are expected to be comparable to undeveloped USFS areas on Rabbit Ears Pass.

Natural Resource Recreation Settings would be affected as follows: Physical Classes would remain Front and Middle Country; Social Classes remain Primitive; and Administrative Classes would remain Front and Middle Country.

9.5.21 Travel Management

Impacts Common to All Alternatives: Minerals and realty impacts on travel management would have minor to major long-term negative impacts depending on the location, timing, extent and duration of projects. Roads, trails, and travel management restrictions may require temporary or permanent relocation, closure, or other management changes as a result.

Wildlife and wildlife habitat management would have minor and usually short term negative impacts on travel management due to possible route and travel restrictions.

Range management impacts on travel management would be negligible overall. Range management operations may require minor temporary or permanent travel management adaptations.

Fire management impacts would be moderately positive. Control and management of fire would help preserve desirable tree, shrub, forb and grass conditions which are consistent with desirable travel management conditions.

Cultural resource and paleontological management impacts would be negligible. Impacts to these resources are considered in site specific planning.

Recreational impacts on travel management would be moderately positive to recreational users because closure to recreational motorized travel and limiting mechanized travel to designated routes would help to limit impacts to travel management resources. The impacts of specific travel route designations would be analyzed in the TMP EA.

9.5.22 Visual Resource Management

Impacts Common to All Alternatives: Visual resource management (VRM) impacts would be generally positive because only low levels of landscape change would be allowed because of the VRM Class II designation. All proposed projects would be reviewed for potential changes to VRM Class II.

9.5.23 Cummulative Impacts Summary

For the purpose of this EA, the geopgraphic boundry for cumulative impact analysis is Routt County, Colorado. In Routt County there are approximately 92,604 acres of BLM administered public lands out of a total1,515,827land acreage for the County. Out of this pulbic land the exchange would reduce public lands by 15,528 acres and increase public lands by 4,404 acres by adding the Emerald Mountain parcel for a net decrease of 11,124 acres.

In looking at past actions within the geographic area over the past ten years, there have not been any major changes to the public lands within Routt County.

The exchange would not have any impact to public lands from a land health basis. Public lands in Routt County that have had public health assessments by a BLM interdisciplinary team (IDT) found no problems with meeting land health standards and a land health assessment of Emerald Mountain by a BLM IDT found no problems with the offered parcel meeting land health standards.

The Proposed Action would not change the overall uses of the offered public lands or the Emerald Mountain parcel. The overall uses such as grazing, hunting, non-motorized recreation etc. would continue.

10.0 Consultation with Others

Agencies and organizations consulted and/or contacted through the public notification process or during preparation of this Environmental Assessment include:

- Tom Estes, Mayor
  PO Box 224
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- Ms. Linda Kakela
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  PO Box 775088
  Steamboat Springs, CO 80477

- Mr. Tom Sullivan
  Routt County Commissioners
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  Steamboat Springs, CO 80477

- Mr. Russ Martin, City Manager
  PO Box 190
  Hayden, CO 81639

- Ms. Cargo Rodeman, Mayor
  PO Box 128
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- Ms. Britt I. Weygandt
  Colorado State Board of Land Commissioners
  1313 Sherman Street, Room 621
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- Susan Werner
  Colorado Division of Wildlife
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- U.S. Fish & Wildlife Service
  Ecological Services
  Western Colorado Field Office (GRJ)
  764 Horizon Drive, Building B
  Grand Junction, CO 81506-3946

- Mr. Neil Cloud, NAGPRA Coordinator
  Southern Ute Indian Tribe
  PO Box 737
  Ignacio, CO 81137

- Ute Mountain Ute Tribal Council
  General Delivery
  Towaoc, CO 81334

- Colorado Commission of Indian Affairs
  State Capitol, Room 130
  Denver, CO 80203

- Uintah and Ouray Tribal Council
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  PO Box 190
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11.0 Contributors

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- Hunter Seim, Range Conservation
- Fred Conrath, Geologist
- Pam Levitt, G.I.S.

Others

- Western Ecological Resource; David Johnson, Heather Houston, Rea Orthner
- Habitat Concepts; Kit Buell
- Wildlife Specialties; Jerry Powell
- Buscher Soil & Environmental; David Buscher

12.0 References

Armstrong, Harley J. and David G. Wolney. 1989. Paleontological Resources of Northwest Colorado: A Regional Analysis. Prepared for BLM by Museum of Western Colorado, Grand Junction, CO. Volume I of IV.

Aune, K.E. 1981. Impacts of Winter Recreations on Wildlife in a Portion of Yellowstone National Park, Wyoming. Thesis, Montana State University, Bozeman Montana. 111 pages.

Bailey, R.G. 1995. Description of the Ecoregions of the United States. 2d ed. Rev. and expanded (1st ed. 1980). Misc. Publ. No. 1391 (rev.), Washington, DC: USDA-Forest Service. 108p. with separate map at 1:7, 5000,000.

BLM. 2004. Mineral Potential Report, Emerald Mountain Land Exchange. Bureau of Land Management, Little Snake Field Office.

Bureau of Land Management. 1991. Colorado Oil and Gas Leasing and Development. Final Environmental Impact Statement. U.S. Dept. of Interior.

CDOW 2001. Boreal Toad Recovery Team Meeting – 2001 boreal toad monitoring and surveys-November 20, 2001. Shane Briggs, coord., Brush, CO. Shane.Briggs@state.co.us

CDOW 2002. Boreal Toad Recovery Team Meeting – 2002 boreal toad monitoring and surveys-November 19, 2002. Mark Jones, coord., Alamosa, CO. Mark.Jones@state.co.us

CDOW 2003a. Boreal Toad Recovery Team Spring Meeting – 2003 boreal toad monitoring and surveys - April 9, 2003. Tina Jungwirth, coord., Denver, CO. Tina.Jungwirth@state.co.us

CDOW 2003b. Boreal Toad Recovery Team Fall Meeting – 2003 boreal toad monitoring and surveys - November 5, 2003. Tina Jungwirth, coord., Denver, CO. Tina.Jungwirth@state.co.us

CDOW 2003c. Colorado Lynx Recovery Project – Lynx Update. Tanya Schenk, coord. November 1, 2003 - Internet website. http://www.dnr.state.co.us/wildlife/T&E/lynx.asp

CDOW. 1978. Essential Habitat for Threatened or Endangered Wildlife in Colorado. Wildlife Mgmt. Section., Div. of Wildl., Dept. of Nat. Res., State of Colorado. 84p.

CDOW. 1994. Wildlife species- habitat database. Unpublished electronic source.

CDOW. 2000. Colorado Lynx Recovery Project – 2000 Progress Report to the U.S. Fish and Wildlife Service. CDOW, Glenwood Springs, CO. December 22, 2000. http://www.dnr.state.co.us/wildlife/T&E/Lynx/USFWS_Progress_Rpt_00.htm

CDOW. 2005. Colorado Listing of Endangered and Threatened Wildlife Species and Species of Special Concern - Internet website. http://www.dnr.state.co.us/wildlife/T&E/list.asp

CDPHE. 2004. Colorado Department of Public Health & Environment – Regulation #93 2004 Section 303(d) List Water – Quality – Limited Segments Requirig TMDLS. Water Quality Control Commission.

CNHP. 1999. Colorado Natural Heritage Program – Conservation Status Handbook. Colorado's Animals, Plants, and Plant Communities of Special Concern. Volume 3 Number 2. Fort Collins, CO.

CNHP. 2003. Colorado Natural Heritage Program – Database Report and GIS Coverage for the National Forests of Colorado, Fort Collins, CO. September 2003. Routt National Forest profiles. CD-ROM.

Connelly, J.W., S.T. Knick, M.A. Schroeder and S.J. Stiver. 2004. Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats. Western Association of Fish and Wildlife Agencies. Unpublished Report. Cheyenne, Wyoming.

Conrath, Fred. 2005. Mineral Potential Report of the Emerald Mountain Land Exchange. Prepared by Fred Conrath, Geologist, Little Snake Field Office, Bureau of Land Management.

Conrath, Fred. 2005a. Mineral Conveyance Assessment for the BLM Parcels Identified for the Emerald Mountain Land Exchange. Prepared by Fred Conrath, BLM Geologist, Little Snake Field Office.

Conrath, Fred. 2005b. Mineral Potential Report of the Emerald Mountain Land Parcel. U.S. Bureau of Land Management, Little Snake Field Office, Craig, CO.

Fertig, W., C. Refsdal, and J. Whipple. 1994. Wyoming Rare Plant Field Guide. Wyoming Rare Plant Technical Committee, Cheyenne. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. http://www.npwrc.usgs.gov/resource/tools/wyplant/wyplant.htm

Fertig, W., C. Refsdal, and J. Whipple. 1994. Wyoming Rare Plant Field Guide. Wyoming Rare Plant Technical Committee, Cheyenne. http://www.npwrc.usgs.gov/resource/tools/wyplant/wyplant.htm

Freddy, D.J., W.M. Bronaugh and M.C. Fowler. 1986. Responses of mule deer to disturbances by persons afoot and snowmobiles. Wildlife Society Bulletin 14(1):63-68.

Gutzwiller, K.J., H.A. Marcum, H.B. Harvey, H.D. Roth and S.H. Anderson. 1998. Bird tolerance to human intrusion in Wyoming montane forests. Condor 100:519-527.

Hammerson, G.A. 1999. Amphibians and reptiles in Colorado: A Colorado field guide. 2nd ed. University Press of Colorado and Colorado Division of Wildlife. 484 pages.

Harrington, H.D. 1964. Manual of the Plants of Colorado. The Swallow Press, Inc. Chicago, IL.
http://migratorybirds.fws.gov/reports/bcc2002.pdf

Ingelfinger, F. 2001. The effects of natural gas development on sagebrush steppe passerines in Sublette County, Wyoming. University of Wyoming, Laramie, WY

Irwin, L.L., and J.M. Peek. 1979. Relationships between road closure and elk behavior in northern Idaho. Pages 199-205 in M.S. Boyce and L.D. Hayden, editors. North American elk: ecology, behavior and management. University of Wyoming, Laramie, Wyoming.

Joslin, G. and H. Youmans, coordinators. 1999. Effect of recreation on Rocky Mountain wildlife: a review for Montana. Committee on Effects of Recreation on Wildlife, Montana Chapter of the Wildlife Society. 307 pp.

Kingery, Hugh E. 1998. Colorado Breeding Bird Atlas. H.E. Kingery, ed. Published by Colorado Bird Atlas Partnership and the Colorado Division of Wildlife.

Kraus, Alan. 2003. Initial Assessment Report, Proposed Real Property Acquisition, Colorado State Land Board Emerald Mountain Parcel. Prepared by Alan Kraus, Hazardous Materials Coordinator, Bureau of Land Management Grand Junction Field Office.

Kraus, Alan. 2005a. Initial Assessment Report, Proposed Real Property Disposal, Emerald Mountain Exchange – Federal Disposal Parcels. Prepared by Alan Kraus, Hazardous Materials Coordinator, Bureau of Land Management Grand Junction Field Office.

Kraus, Alan. 2005b. Memorandum 1703, Addendum to Emerald Mountain Exchange Federal Parcels Initial Assessment. Prepared by Alan Kraus, Hazardous Materials Coordinator, Bureau of Land Management Grand Junction Field Office.

Loeffler, C. (ed.), 2001. Conservation plan and agreement for the management and recovery of the southern Rocky Mountain population of the boreal toad (*Bufo boreas boreas*), Boreal Toad Recovery Team. 76 pp. + appendices. http://www.dnr.state.co.us/wildlife/aquatic/boreal/index.html

McClelland, Bruce R. and James A. Lowe. 2005. A Class III Cultural Resource Inventory of Additional Parcels for the Proposed Emerald Mountain Land Exchange, Routt County, Colorado. MAI Project 44175; BLM 22.2.05. TRC Mariah Associates Inc., Laramie, Wyoming.

Miller, A.E. 1977. Geology of Moffat County, Colorado. Colorado Geological Survey Map Series 3, 1:126,720.

Miller, S.G., R.L. Knight and C.K. Miller. 1998. Influence on recreation trials on breeding bird communities. Ecological Application 8:162-169.

NatureServe Explorer, 2005. NatureServe Explorer: An online encyclopedia of life [web application]. Version 1.6. Arlington, Virginia, USA: NatureServe. Available: *http://www.natureserve.org/explorer* . (Accessed: June 29, 2005).

NDIS. 2005. Natural Diversity Information System Internet website – Routt County profiles. Colorado Natural Heritage Program, Fort Collins, CO. http://ndis.nrel.colostate.edu/escop/cnhp/SUSCOHPq4228.html

Olliff, T., K. Legg and B. Kaeding, editors. 1999. Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordination Committee, Yellowstone National Park, Wyoming. 315 pages.

Prichard, Don, et al. 1998. Riparian Area Management, Process for Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas. USDI, BLM, National Applied Resource Sciences Center, Denver, CO.

Reust, Thomas and James A. Lowe. 2004. A Class III Cultural Resource Inventory of the Proposed Emerald Mountain Land Exchange, Routt and Moffat Counties, Colorado. TRC Mariah Associates Inc., Laramie, Wyoming.

Reijin, R. and R. Foppen. 1994. The effects of car traffic on breeding bird populations in woodlands. I. Evidence of reduced habitat quality for willow warblers (Phylloscopus trochilus) breeding close to a highway. Journal of Applied Ecology 31:85-94.

Ruediger, B.J. Claar; S. Mighton; B. Naney; F. Wahl; N. Warren; D. Wenger; A. Williamson; L. Lewis; B. Holt; G. Patton; J. Trick; Avandehey; and S. Gniadek. 2000. Canada Lynx Conservation Assessment and Strategy. USDI, BLM, USDA FS, USDI NPS and USDI FWS.

Ruggiero, L. F.; Aubry, K. B.; Buskirk, S. W.; Koehler, G. M.; Krebs, C. J.; McKelvey, K. S.; Squire, J. R.. 2000. Ecology and Conservation of Lynx in the United States. University Press of Colorado, Boulder, CO. 480p.

Shenk, T.M. 2001. Post-Release Monitoring of Lynx Reintroduction to Colorado – Annual progress Report for the U.S. Fish and Wildlife Service – Interim Report Preliminary Results. Colorado Division of Wildlife. December 2001.33p. - Internet website.

Sime, C.A. 1999. Domestic dogs in wildlife habitat. Pages 8.1 -8.17 in Joslin, G. and H. Youmans, coordinators. 1999. Effect of recreation on Rocky Mountain wildlife: a

review for Montana. Committee on Effects of Recreation on Wildlife, Montana Chapter of the Wildlife Society. 307 pp.

Spackman, S. et al. 1997. Colorado Rare Plant Field Guide, prepared for the U.S. Bureau of Land Management, U.S. Forest Service, & U.S. Fish & Wildlife Service. Colorado Natural Heritage Program.

Spackman, S., and David G. Anderson. 2002. Colorado Rare Plant Field Guide 2002 Update. Prepared for the Bureau of Land Management, The U.S. Forest Service, and the U.S. Fish and Wildlife Service by the Colorado Natural Heritage Program.

U.S. Fish and Wildlife Service. 1995. Ute Ladies'-tresses *(Spiranthes diluvialis)* recovery plan. U.S. Fish and Wildlife Service, Denver, Colorado. 46 pp.

University of Colorado Herbarium (COLO). Specimen Database of Colorado Vascular Plants. http://cumuseum.colorado.edu/Research/Botany/Databases/search.php

USDA-FS. 1997. Revised Land and Resource Management Plan, Final Environmental Impact Statement, and Appendices for the Routt National Forest. Steamboat Springs, CO. USDA-Forest Service, Rocky Mtn. Region. 3 volumes.

USDA-FS. 2004a. Modeled Canada Lynx Habitat Mapping – Geographic Information System database. May 2003. USDA-Forest Service, Medicine Bow-Routt National Forest, Steamboat Springs, Co. Robert Skorkowsky, ed. Unpublished ArcView / ArcExplorer GIS software and data files.

USDA-FS. 2004b. Modeled Canada Lynx Habitat Database. April 2002. USDA-Forest Service, Medicine Bow-Routt National Forest, Steamboat Springs, Co. Robert Skorkowsky, ed. Unpublished Excel spreadsheet.12 sheets.

USDA, NRCS. 2006. *The PLANTS Database*, 6 March 2006 (http://plants.usda.gov). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USDA-SCS. 1973. Land-Capability Classification. Agricultural Handbook No. 210.

USDA-Soil Survey Staff. 1999. Keys to Soil Taxonomy: 8th Edition. Pocahontas Press, Inc. Blacksburg, Virginia.

USDI-BLM. 1989. Resource Management Plan and Record of Decision, Little Snake Resource Area. (Denver: Bureau of Land Management, April 26, 1989). http://www.co.blm.gov/nepa/lustatus.htm

USDI-BLM. 1997. Colorado Public Land Health Standards – Environmental Assessment, and Decision Record & Finding of No Significant Impact for Standards for Public Land Health and Guidelines for Livestock Grazing Management. (Denver: Bureau of Land Management, December, 1997). 208p. http://www.co.blm.gov/nepa/lustatus.htm

USDI-BLM. 2004. Sensitive Species List – USDI-BLM Website. USDI-BLM, Colorado State Office, Denver, CO. http://www.co.blm.gov [Accessed March 2, 2004]

USDI-FWS 2002. Birds of conservation concern 2002. Division of Migratory Bird Management, Arlington, Virginia. 99 pp. [Online version available at

USDI-FWS. 1983. Northern States Recovery Plan for the Bald Eagle *(Haliaeetus leucocephalus)*. U.S. Fish and Wildlife Service Endangered Species Office, Twin Cities, MN. 76p.

USDI-FWS. 1993. Notice of availability of draft agreement regarding Section 7 consultation, sufficient progress and historic projects, recovery implementation program for the endangered fish species in the upper Colorado River basin, and the draft recovery implementation program recovery action plan. Federal Register 58(159):44188-44189. 19 August 1993.

USDI-FWS. 1994a. Programmatic Biological Opinion for Minor Water depletions in the Upper Colorado River Basin in Colorado. Letter to State Director, Bureau of Land Management, Denver, CO June 13, 1994. USDI-FWS, Regional Director, Region 6, Denver , CO ES/GJ-6-CO-94-F-017 MS 60120.

USDI-FWS. 1994b. Programmatic Biological Opinion for Minor Water depletions in Colorado. Letter to State Director, Bureau of Land Management, Denver, CO June 13, 1994. USDI-FWS, Regional Director, Region 6, Denver , CO ES 60120.

USDI-FWS. 1995. Mexican Spotted Owl *(*Strix occidentalis lucida) Recovery Plan. Region 2, U.S. Fish and Wildlife Service, Albuquerque, N.M. http://ifw2es.fws.gov/Documents/R2ES/MSO_Recovery_Plan.pdf

USDI-FWS. 1997. Razorback sucker *(Xyrauchen texanus)* draft recovery plan. Denver, Colorado.

USDI-FWS. 1999. Federal Register: July 6, 1999 (64 Federal Register 36454-36464). Rules and Regulations, Pages 36454-36464, Department of Interior, Fish and Wildlife Service, 50 CFR Part 17, Endangered and Threatened Wildlife and plants; Proposed Rule To Remove the Bald Eagle in the Lower 48 States From the List of Endangered and Threatened Wildlife; Proposed Rule.

USDI-FWS. 2000. Federal Register: March 24, 2000 (Volume 65, Number 58) Rules and Regulations, Pages 16051-16086, Department of Interior, Fish and Wildlife Service, 50 CFR Part 17, Endangered and Threatened Wildlife and plants; *Determination of Threatened Status for the Contiguous U.S. Distinct Population Segment of the Canada Lynx and Related Rule; Final Rule.*

USDI-FWS.1990. Proposal to determine the razorback sucker *(Xyrauchen texanus)* to be an endangered species. 22 May 1990. Federal Register 55(99):21154-21161.

USDI-FWS-NMFS. 1998. Endangered Species Consultation Handbook. Procedures for Conducting Consultations and Conferences. U. S. Fish and Wildl. Serv., and Nat. Marine Fisheries Serv. March 1998. Chapter 3. 19p.

USGS. 2005. Ground Water Atlas of the United States: Arizona, Colorado, New Mexico, and Utah. Available online: http://capp.water.usgs.gov/gwa/ch_c/C-text8.html

Utah Native Plant Society. 2003-2005. Utah Rare Plant Guide. Salt Lake City, UT: Utah Rare Plant Guide Home Page. http://www.utahrareplants.org

Weber, W. A. and R. C. Whitmann. 2001. Colorado Flora: Western Slope, Third edition. University Press of Colorado. Boulder, Colorado.

Weber, W.A. & R.C. Whitmann. 1992. Catalog of the Colorado Flora: a Biodiversity Baseline. University Press of Colorado. Niwot, CO. Including most recent addenda available form CU Herbarium (COLO), Boulder, CO.

Welsh, Stanley L., et al. 1987. A Utah Flora. Brigham Young University. Great Basin Naturalist Memoirs.

Western Ecological Resource. 2005. Biological Assessment, Emerald Mountain Land Exchange, Routt and Moffat Counties, Colorado. Prepared for: U.S. Department of the Interior, Bureau of Land Management, Little Snake Field Office, 455 Emerson Street, Craig, Colorado, 81625-1129. Prepared by: Western Ecological Resource, Inc., 711 Walnut Street, Boulder, Colorado, 80302, May 2005.

13.0 Tables

TABLE 2.0-1
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Legal Description: Township & Range	Legal Description: Section, Tract and Lot	Size (Acres)	Participant
1	T. 12 N., R. 88 W.	sec. 13, lot 7 sec. 24, lot 1	79.88	Sparks
2	T. 12 N., R. 88 W.	sec. 14, lots 5, 6, 9, 10, 11, 12 & 13 sec. 23, Tract 41, lot 1	147.50	Marsh
3	T. 12 N., R. 88 W.	sec. 20, SE¼SE¼	40.00	Stull Ranches
4	T. 12 N., R. 88 W.	sec. 21, lot 1	17.25	Stull Ranches
5	T. 12 N., R. 88 W.	sec. 23, SE¼SW¼	40.00	Marsh
6	T. 12 N., R. 88 W.	sec. 26, N½SE¼ & SW¼SE¼	120.00	Sheep Mountain Partnership
8	T. 12 N., R. 87 W.	sec. 19, lots 6 & 7	19.47	Sheep Mountain Partnership
9	T. 12 N., R. 87 W.	sec. 20, lots 3 & 4	10.98	Sheep Mountain Partnership
11	T. 10 N., R. 86 W.	sec. 23, N½NE¼ & SW¼NE¼	120.00	Fetcher
12	T. 10 N., R. 86 W.	sec. 36, SW ¼ SE ¼	40.00	Hill
13	T. 10 N., R. 85 W.	sec. 20, lots 15 & 18	48.09	Woods
14	T. 10 N., R. 85 W.	sec. 19, lot 17 sec. 20, lots 16, 17, 20, 22 & Tract 46A	24.09	SLB
15	T. 10 N., R. 85 W.	sec. 26, lot 19	4.87	Ross
16	T. 8 N., R. 88 W. T. 9 N., R. 88 W. T. 8 N., R. 89 W.	sec. 6, lots 9, 10, 11, 12, 13, 17 & 18 sec. 7, Tract 70B sec. 31, lots 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 & 15 sec. 32, lots 2, 3, 8 & E½NW¼ sec. 12, lots 1, 2, 7 & 8	875.02	Rancho Greco/Nottingham

TABLE 2.0-1
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Legal Description: Township & Range	Legal Description: Section, Tract and Lot	Size (Acres)	Participant
17	T. 9 N., R. 88 W.	sec 33, lots2, 3 & 4	23.12	Nottingham
18	T. 8 N., R. 88 W.	sec. 4, lot 6 sec. 5, lot 5		
	T. 9 N., R. 88 W.	sec. 33, lot 8	40.33	Nottingham
19	T. 9 N., R. 88 W.	sec. 33, lot 7	40.00	Nottingham
20	T. 9 N., R. 88 W.	sec. 35, lots 1, 3 & 7	47.90	Nottingham
21	T. 9 N., R. 86 W.	sec. 1, lots 9 & 10	12.92	Wheatley/King/Allen
21A	T. 9 N., R. 86 W.	sec. 33, Tract 40, lot 16	1.93	Routt Investments
22	T. 9 N., R. 86 W.	sec. 34, NW¼NW¼	40.00	Chew
22A	T. 9 N., R. 86 W	sec. 34, Tract 40, lots 11, 12, 16, 18	28.84	Routt Investments
23	T. 9 N., R. 86 W.	sec. 35, lot 1	44.77	Chew
24	T. 8 N., R. 88 W.	sec. 7, lots 9, 11, 12, 13 & 14 sec. 8, lots 2, 4, 5, 10 & 11		
	T. 8 N., R. 89 W.	sec. 12, lot 16	388.30	Murphy/Nottingham
25	T. 8 N., R. 88 W.	sec. 2, lots 15 & 16	77.96	Spitzley
26	T. 8 N., R. 88 W.	sec. 4, lots 5, 10 & 11	40.01	Murphy/Nottingham
27	T. 8 N., R. 88 W.	sec. 4, lots 7, 8 & 9	48.24	Nottingham
28	T. 8 N., R. 88 W.	sec. 4, lot 12 sec. 5, lots 11, 12, 16 & 17	74.45	Murphy/Nottingham
29	T. 8 N., R. 88 W.	sec. 8, Tract 43B	40.00	Murphy

TABLE 2.0-1
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Legal Description: Township & Range	Legal Description: Section, Tract and Lot	Size (Acres)	Participant
31	T. 8 N., R. 88 W.	sec. 19, lot 5 sec. 20, lot 3	36.19	Cook
32	T. 8 N., R. 88 W.	sec. 19, Tract 74	39.08	Nottingham
33	T. 8 N., R. 88 W.	sec. 30, Tracts 82G, 82H, 82I, 82J, 82O & 82P sec. 31, Tracts 83A, 83B, 83G, 83H, 83I, 83J, 83K, 83L & 83P	592.64	Nottingham
37	T. 8 N., R. 86 W. T. 8 N., R. 87 W.	sec. 19, Tract 92, lots 9, 10, 11, 12, 13, 14 & 15 sec. 30, lots 5, 6 & 7 sec. 24, NE¼SE¼	261.94	Mystic Hill Ranch
38	T. 8 N., R. 87 W.	sec. 25, N½NW¼ & SE¼NW¼	120.00	Smith Rancho/Mystic Hill Ranch
39	T. 8 N., R. 87 W.	sec. 25, NW¼SW¼	40.00	Smith Rancho
40	T. 7 N., R. 87 W. T. 8 N., R. 87 W.	sec. 3, lots 3 & 4 sec. 4, lots 1 & 2 sec. 33, SE¼	322.44	Smith Rancho
40A	T. 8 N., R. 86 W	sec 1, lot 7	50.77	Ellsworth
41	T. 8 N., R. 86 W.	sec. 2, lots 5 & 6	98.70	Harvey/Chew
42	T. 8 N., R. 86 W.	sec. 4, lots 12 & 13 sec. 5, lots 5, 6, 7 & 8 sec. 7, Tracts 61B, 61C, 64B, 64C & lot 5 sec. 8, Tracts 61A, 64A, lots 1, 2, 3, 4, 5, 6, 7, 8, 9 & N½NE¼ sec. 9, lots 3 & 4 sec. 17, lots 1, 2, 3, 4, 5, & 6	1,070.78	Poole/Nottingham/Meadows Realty

TABLE 2.0-1
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Legal Description: Township & Range	Legal Description: Section, Tract and Lot	Size (Acres)	Participant
43	T. 8 N., R. 86 W.	sec. 10, lot 6	11.58	Guthrie
44	T. 8 N., R. 86 W.	sec. 15, lot 5	7.56	Poole
45	T. 8 N., R. 86 W.	sec. 26, lot 1 sec. 27, lot 2	21.40	Meadows Realty
46	T. 8 N., R. 86 W.	sec. 27, lot 1	39.84	Meadows Realty
47	T. 8 N., R. 85 W.	sec. 5, lots 5, 6, 7 & 8 sec. 6, lots 8, 9, 10, 11, 12, 13, 14, 15, 16, S½NE¼, SE¼NW¼, NE¼SW¼, N½SE¼ & SE¼SE¼	756.71	Chew
48	T. 8 N., R. 85 W.	sec. 7, lot 7	8.06	Chew
49	T. 8 N., R. 85 W.	sec. 7, lot 11	8.65	Komfala
50	T. 8 N., R. 85 W.	sec 9, lots 1-4, S½SE¼ & NE¼SE¼	267.17	Souders/Riskind/Taylor
51	T. 8 N., R. 85 W.	sec 16, lots 4 & 5	7.51	SLB
52	T. 7 N., R. 88 W.	sec. 2, SE¼NW¼	40.00	SLB
54	T. 7 N., R. 88 W.	sec. 6, SW¼NE¼	40.00	Nottingham
55	T. 7 N., R. 88 W.	sec. 6, lot 5	35.12	Nottingham
56	T. 7 N., R. 88 W.	sec. 17, NE¼SW¼	40.00	Nottingham
57	T. 7 N., R. 88 W.	sec. 20, SW¼NE¼	40.00	Nottingham
58	T. 7 N., R. 87 W.	sec. 4, NW¼SE¼ & S½SE¼ sec. 9, NE¼NE¼		

TABLE 2.0-1
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Legal Description: Township & Range	Legal Description: Section, Tract and Lot	Size (Acres)	Participant
		sec. 10, N½NE¼, N½NW¼ & SW¼NW¼ sec. 11, lots 2, 3, 4, 5, 6 & 7	596.97	Smith Rancho/Waltrip
59	T. 7 N., R. 86 W. T. 7 N., R. 87 W.	sec. 18, lot 6 sec. 13, lot 1	40.03	Waltrip
60	T. 7 N., R. 87 W.	sec. 13, lots 2, 3 & 4	62.71	Waltrip
61	T. 7 N., R. 87 W.	sec. 18, SW¼NE¼, SE¼NW¼, NE¼SW¼ & NW¼SE¼	160.00	Smith Rancho
62	T. 7 N., R. 87 W.	sec. 23, lots 1, 4, 6, 8, 9, 10 & 13 sec. 24, lot 4	170.76	Waltrip
63	T. 7 N., R. 87 W.	sec. 25, lot 15	39.27	Waltrip
64	T. 7 N., R. 87 W.	sec. 33, NE¼SW¼	40.00	Waltrip
65	T. 7 N., R. 86 W.	sec. 6, lot 8	40.30	Smith Rancho
66	T. 7 N., R. 86 W.	sec. 6, Tract 68 sec. 7, lot 6	186.18	Smith Rancho
67	T. 7 N., R. 86 W.	sec. 8, lot 1	7.48	Waltrip
68	T. 7 N., R. 86 W.	sec. 3, lot 10 sec. 10, lot 1	8.69	Sherrod
69	T. 7 N., R. 86 W.	sec. 16, lots 1, 2, 3 & 4 sec. 17, lot 7 & SE¼ sec. 20, NE¼ sec. 21, N½ sec. 22, lots 1, 2, 3, 4, 5, 6, S½NW¼ & N½SW¼	972.56	Waltrip
70	T. 7 N., R. 86 W.	sec. 18, lot 10	6.55	Waltrip

TABLE 2.0-1
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Legal Description: Township & Range	Legal Description: Section, Tract and Lot	Size (Acres)	Participant
71	T. 7 N., R. 86 W.	sec. 20, SE¼SW¼ sec. 29, E½NW¼	120.00	Utterback
73	T. 6 N., R. 89 W.	sec. 23, lot 12	41.86	Frentress
76	T. 6 N., R. 86 W.	sec. 33, SW¼SW¼	40.00	SLB
77	T. 6 N., R. 86 W.	sec. 35, NW¼NE¼ & N½NE¼	120.00	Iacovetto
78	T. 6 N., R. 84 W.	sec. 10, SE¼NE¼	40.00	Solo
80	T. 5 N., R. 87 W.	sec. 19, W½NW¼ sec. 24, E½NE½	160.00	Ricks
81	T. 5 N., R. 88 W.	sec. 35, lot 4	40.00	Ricks
82	T. 4 N., R. 87 W. T. 5 N., R. 88 W.	sec. 7, lots 2, 3, 4 & 5 sec. 36, lots 9, 10, 11 & 12	202.84	Cross Mountain
82A	T. 5 N., R. 87 W.	sec. 7, NW¼NE¼	40.00	J. Maneotis
83A	T. 5 N., R. 87 W.	sec. 27, N½NE¼SW¼	20.00	Cross Mountain
84	T. 5 N., R. 87 W.	sec. 29, W½NW¼ sec. 30, E½NE¼	160.00	Patrick
85	T. 5 N., R. 87 W.	sec. 30, NW¼NW¼	40.00	Ricks
88	T. 5 N., R. 87 W.	sec. 33, E½NW¼	80.00	Montieth
90	T. 5 N., R. 85 W.	sec. 11, lot 1	26.06	Roundtree
91	T. 4 N., R. 89 W.	sec. 11, SW¼	160.00	Wyman

TABLE 2.0-1
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Legal Description: Township & Range	Legal Description: Section, Tract and Lot	Size (Acres)	Participant
93	T. 4 N., R. 88 W.	sec. 12, SW¼ sec. 13, NE¼NW¼	200.00	Cross Mountain
94	T. 4 N., R. 88 W.	sec. 14, NE¼, S½NW¼ & SW¼ sec. 23, NW¼NE¼ & NE¼NW¼	480.00	Cross Mountain
95	T. 4 N., R. 88 W.	sec. 24, SW¼NE¼	40.00	Cross Mountain
96	T. 4 N., R. 88 W.	sec. 25, SE¼SW¼	40.00	Cross Mountain
97	T. 4 N., R. 88 W.	sec. 26, SW¼NE¼ & W½ sec. 35, N½NW¼	440.00	Cross Mountain
98	T. 4 N., R. 88 W.	sec. 35, E½E½ & SW¼SE¼	200.00	Cross Mountain
99	T. 4 N., R. 87 W.	sec. 17, NE¼NW¼	40.00	Cross Mountain
101	T. 4 N., R. 87 W.	sec. 10, SE¼SE¼ sec. 14, E½SE¼, SW¼SW¼ & W½SE¼ sec. 15, E½E½ & SW¼SE¼ sec. 23, NW¼NE¼, S½NE¼, NW¼ & S½	1,040.00	Hunter/Cross Mountain
102	T. 4 N., R. 86 W.	sec. 9, lot 3	46.46	Hunter
104	T. 4 N., R. 86 W.	sec. 17, SE¼SW¼	40.00	Hunter
104A	T. 4 N., R. 86 W.	sec. 33, SW¼NW¼	40.00	Brusca
104B	T. 4 N., R. 86 W.	sec. 32, NE¼SE¼	40.00	Boehm
104C	T. 4 N., R. 86 W.	sec. 32, SW¼SE¼	40.00	Boehm
104D	T. 4 N., R. 86 W.	sec. 28, NE¼SW¼	40.00	Monroe
105	T. 4 N., R. 85 W.	sec. 11, lot 9		

TABLE 2.0-1
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Legal Description: Township & Range	Legal Description: Section, Tract and Lot	Size (Acres)	Participant
		sec. 14, lot 2	80.69	Jones
105A	T. 4 N., R. 85 W.	sec. 17, lot 8	39.97	A. Maneotis
105B	T. 4 N., R. 85 W.	sec. 20, lots 3 & 6	82.33	A. Maneotis
105C	T. 4 N., R. 85 W.	sec. 20. lot 7	41.40	A. Maneotis
106	T. 3 N., R. 88 W.	sec. 5, SE¼NW¼	40.00	Cosby
107	T. 3 N., R. 88 W.	sec. 6, lots 6 & 7 sec. 7, lot 8, SW¼NW¼ & SW¼	320.95	Cross Mountain
108	T. 3 N., R. 88 W.	sec. 6, NE¼SE¼	40.00	Cosby
109	T. 3 N., R. 88 W.	sec. 8, SW¼SW¼ & SE¼SE¼ sec. 17, lots 1, 2, 3, 4, 5, 6, SW¼NE¼ & SE¼NW¼	425.02	Cosby
110	T.3 N, R. 88 W.	sec. 9, NE¼SE¼	40.00	Omlid
111	T. 3 N., R. 88 W.	sec. 9, SW¼SE¼	40.00	Omlid
112	T. 3 N., R. 88 W.	sec. 16, SE¼NE¼	40.00	Signs
113	T. 3 N., R. 88 W.	sec. 16, SW¼SE¼	40.00	Cosby
114	T. 3 N., R. 87 W.	sec. 1, SW¼SW¼	40.00	Hunter
114B	T. 3 N., R. 86 W.	sec. 12, lots 5 & 6	83.83	J. Maneotis
114C	T. 3 N., R. 86 W.	sec. 12, lots 9, 15 & 16 sec. 13, lots 2 & 3 sec. 7, lot 10	243.88	J. Maneotis

TABLE 2.0-1
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Legal Description: Township & Range	Legal Description: Section, Tract and Lot	Size (Acres)	Participant
115	T. 3 N., R. 85 W.	sec. 18, lots 9 & 16		
	T. 3 N., R. 86 W.	sec. 13, lots 9, 15, 16, 17 & 19	229.79	Wertenteil
115A	T. 3 N., R. 86 W.	sec. 13, lot 21	10.58	J. Maneotis
116	T. 3 N., R. 86 W.	sec. 14, lots 13 & 14		
		sec. 15, lots 18 & 19	136.38	Pinnacle Peak
117	T. 3 N., R. 86 W.	sec. 15, lot 12	10.48	Pinnacle Peak
118	T. 3 N., R. 86 W.	sec. 15, lot 15		
		sec. 16, lot 10	20.98	Pinnacle Peak
119	T. 3 N., R. 86 W.	sec. 27, lots 1 & 2	83.33	Pinnacle Peak
120	T. 3 N., R. 85 W.	sec. 10, lot 12	43.21	Crawford
121	T. 3 N., R. 85 W.	sec. 17, lot 4	41.33	Craig
123	T. 2 N., R. 86 W.	sec. 11, N½SW¼SE¼NE¼ & SW¼SW¼SE¼NE¼	7.50	Broken Bone Ranch
124	T. 2 N., R. 86 W.	sec. 11, N½NW¼NW¼SE¼, SW¼NW¼NW¼SE¼ & NW¼SW¼NW¼SE¼	10.00	Broken Bone Ranch
125	T. 2 N., R. 86 W.	sec. 11, SW¼SE¼	40.00	Broken Bone Ranch
126	T. 2 N., R. 86 W.	sec. 12, SE¼NE¼SE¼NW¼, E½SE¼SE¼NW¼ & NW¼SE¼SE¼NW¼	10.00	Broken Bone Ranch
128	T. 2 N., R. 85 W.	sec. 7, lots1, 2 & 3	101.10	Broken Bone Ranch
129	T. 2 N., R. 85 W.	sec. 9, W ½ SW ¼	80.00	R&T Land & Cattle

TABLE 2.0-1
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Legal Description: Township & Range	Legal Description: Section, Tract and Lot	Size (Acres)	Participant
130	T. 2 N., R. 85 W.	sec. 23, E ½ NE ¼	80.00	Brooks
131	T. 1 N., R. 85 W.	sec. 7, lots 1, 2, NE¼NW¼ & SE¼NW¼	153.27	Krausgrill/Horowitz
		Total Acres	**15,528.06**	

TABLE 2.0-2
Offered Non-Federal Parcel
Emerald Mountain Parcel
Emerald Mountain Land Exchange

Legal Description			
Township & Range	**Section & Lot**	**Size (Acres)**	**Participant**
T.6N.,R.85W	Sec. 13, SE¼SE¼, excepting and excluding the west 100 feet thereof and the north 100 feet thereof;		State Land Board
	Sec. 15, SE¼, S½NE¼ & S½SW¼;		
	Sec. 21, that portion of the S½N½SE¼NE¼, S½SE¼NE¼, and E½SE¼ located north and east of the Cow Creek Road (CR 45);		
	Sec. 22, All;		
	Sec. 23, W½NW¼, NW¼SE¼NW¼, S½SE¼NW¼, SW¼, S½N½SE¼, and S½SE¼;		
	Sec. 24, NE¼NE¼, W½NE¼, E½E½NW¼, NE¼SW¼, S½NW¼SW ¼, S½SW¼, W½SE¼, and SE¼SE¼;		
	Sec. 25, All;		
	Sec. 26, All;		
	Sec. 27, that portion located north and east of the Cow Creek Road (CR 45);		
	Sec. 34, that portion located north and east of the Cow Creek Road (CR 45);		
	Sec. 35, that portion located north and east of the Cow Creek Road (CR 45);		
		Total 4,404.28 acres	

TABLE 6.2-1
Perennial Streams, Rivers, Lakes, Ponds, & Floodplains
Emerald Mountain Land Exchange

Parcel Number	Name	Stream Length x Width (feet)	Lake/Pond Area (ft^2)	Approximate Width of Floodplain (feet)
	Selected Federal Parcels			
2	Little Snake River	2,165 x 200	--	1,000
2	Stock Pond	--	1,008	
3	Butter Lake	--	76,592	
11	Dutch Gulch	426 x 4	--	25
14	Pond along unnamed tributary to Steamboat Lake	--	8,490	
16	Stock Pond	--	6,348	
16	Approximately 6 stock ponds	--	30,362	
20	Elkhead Creek	1,432 x 25	--	200
21	Red Creek	394 x 3.5	--	100
21	Stock Pond	--	300	
22a	Beaver Pond	--	2,000	
22a	East Fork Smith Creek	281 x 3	--	30
24	Elkhead Creek	5,618 x 30	--	200-900
24	North Fork Elkhead Creek	1,546 x 15	--	50
26	Elkhead Creek	329 x 15	--	200
27	Elkhead Creek	1,785 x 25	--	200
28	Elkhead Creek	2417 x 30	--	200-300
40	Pond along ephemeral tributary to Morgan Creek	--	15,730	
40a	Tributary to Dutch Gulch	781 x 2.5	--	10
41	Two isolated natural ponds	--	19625	
42	Day Creek	7,536 x 10	--	
47	Stock Pond along McPhee Creek	--	3,596	100
48	Dutch Gulch	94 x 10	--	100
50	Taylor Creek	4,363 x 3	--	20
54	Elkhead Creek	1,335 x 30	--	450
58	Pond north of Fish Creek	--	15,519	
58	Schaefermeyer Reservoir No. 4	--	70,897	
58	Series of four beaver ponds	--	9,571	
58	Pond northeast of reservoir	--	4,631	
59	Unnamed pond	--	26,065	
66	North Fork Chimney Creek	1,543 x 2	--	25-200
66	South Fork Chimney Creek	2,804 x 2	--	25-200
68	Stock pond along tributary to Salt Creek	--	10,876	
69	Stock pond along upland drainage to Tow Creek	--	7,122	

TABLE 6.2-1
Perennial Streams, Rivers, Lakes, Ponds, & Floodplains
Emerald Mountain Land Exchange

Parcel Number	Name	Stream Length x Width (feet)	Lake/Pond Area (ft^2)	Approximate Width of Floodplain (feet)
	Selected Federal Parcels			
71	Tow Creek	522 x 3	--	20
80	Stock Pond along east ephemeral tributary to Sage Creek	--	11,504	
85	Sage Creek	1,009 x 1.5	--	10
94	Stock Pond along ephemeral tributary to Willow Creek		4,968	
94	Willow Creek	618 x 10	--	35
98	Unnamed perennial stream east of Willow Creek	3,292 x 4	--	20
98	Willow Creek	2,607 x 4	--	25
99	Yoast Gulch	665 x 1.5	--	10
101	Coyote Creek	2,024 x 3.0	--	20
101	Foidel Creek and one perennial stock pond	1,198 x 1	2010	2
104a	Trout Creek	712 x 22.5		150
107	Eight Beaver Ponds	--	12,785	
108	Two Beaver ponds	--	71,007	
109	Drainage in southeast	520 x 6	--	none
109	Middle drainage swale	3629 x 10	--	none
112	East Fork Williams Fork River	241 x 50	--	1,000
116	Beaver Pond		2033	
118	Oak Creek	2340 x 10	--	12
130	Phillips Creek	824 x 6	--	500
	Offered Non-Federal Parcel			
Emerald Mountain	Cow Creek	18,558 x 5-10		20 - 100
Emerald Mountain	Stock pond		1,260	--
Emerald Mountain	Stock pond		61,849	--
Emerald Mountain	Natural pond		6,477	--
Emerald Mountain	Two stock ponds		18,226	--
Emerald Mountain	Stock pond/ old beaver pond		13,524	--
Emerald Mountain	Stock pond		13,471	--

Average width of streams taken at ordinary high water line.
Please note, some ponds may be isolated and hence non-jurisdictional.

Named and unnamed ephemeral streams are not included in this table.

TABLE 6.5-1
Birds Potentially Present in Routt County, Colorado
Emerald Mountain Land Exchange

Common Name	Scientific Name	Abundance
American Avocet	*Recurvirostra americana*	Rare
American Coot	*Fulica americana*	Uncommon
American Crow	*Corvus brachyrhynchos*	Fairly Common
American Dipper	*Cinclus mexicanus*	Uncommon
American Goldfinch	*Carduelis tristis*	Fairly Common
American Kestrel	*Falco sparverius*	Fairly Common
American Peregrine Falcon	*Falco peregrinus anatum*	Unknown
American Pipit	*Anthus rubescens*	Rare
American Redstart	*Setophaga ruticilla*	Unknown
American Robin	*Turdus migratorius*	Common
American Tree Sparrow	*Spizella arborea*	Unknown
American Wigeon	*Anas americana*	Uncommon
Ash-throated Flycatcher	*Myiarchus cinerascens*	Unknown
Baird's Sandpiper	*Calidris bairdii*	Unknown
Bald Eagle	*Haliaeetus leucocephalus*	Unknown
Band-tailed Pigeon	*Columba fasciata*	Rare
Bank Swallow	*Riparia riparia*	Common
Barn Swallow	*Hirundo rustica*	Common
Belted Kingfisher	*Ceryle alcyon*	Fairly Common
Bewick's Wren	*Thryomanes bewickii*	Unknown
Black Rosy Finch	*Leucosticte atrata*	Unknown
Black Swift	*Cypseloides niger*	Unknown
Black Tern	*Chlidonias niger*	Unknown
Black-billed Magpie	*Pica pica*	Common
Black-capped Chickadee	*Poecile atricapillus*	Fairly Common
Black-chinned Hummingbird	*Archilochus alexandri*	Fairly Common
Black-crowned Night-Heron	*Nycticorax nycticorax*	Unknown
Black-headed Grosbeak	*Pheucticus melanocephalus*	Fairly Common
Black-throated Gray Warbler	*Dendroica nigrescens*	Uncommon
Blue Grouse	*Dendragapus obscurus*	Uncommon
Blue-gray Gnatcatcher	*Polioptila caerulea*	Fairly Common
Blue-winged Teal	*Anas discors*	Uncommon
Bobolink	*Dolichonyx oryzivorus*	Rare
Bohemian Waxwing	*Bombycilla garrulus*	Unknown
Bonaparte's Gull	*Larus philadelphia*	Unknown
Boreal Owl	*Aegolius funereus*	Unknown
Brewer's Blackbird	*Euphagus cyanocephalus*	Common
Brewer's Sparrow	*Spizella breweri*	Common
Broad-tailed Hummingbird	*Selasphorus platycercus*	Common
Brown Creeper	*Certhia americana*	Uncommon
Brown-capped Rosy Finch	*Leucosticte australis*	Unknown
Brown-headed Cowbird	*Molothrus ater*	Common
Bufflehead	*Bucephala albeola*	Unknown
Bullock's Oriole	*Icterus bullockii*	Fairly Common
California Gull	*Larus californicus*	Unknown
Calliope Hummingbird	*Stellula calliope*	Unknown
Canada Goose	*Branta canadensis*	Common
Canyon Wren	*Catherpes mexicanus*	Unknown
Cassin's Finch	*Carpodacus cassinii*	Fairly Common
Cattle Egret	*Bubulcus ibis*	Unknown
Cedar Waxwing	*Bombycilla cedrorum*	Uncommon

TABLE 6.5-1
Birds Potentially Present in Routt County, Colorado
Emerald Mountain Land Exchange

Common Name	Scientific Name	Abundance
Chipping Sparrow	*Spizella passerina*	Common
Cinnamon Teal	*Anas cyanoptera*	Fairly Common
Clark's Grebe	*Aechmophorus clarkii*	Unknown
Clark's Nutcracker	*Nucifraga columbiana*	Fairly Common
Clay-colored Sparrow	*Spizella pallida*	Unknown
Cliff Swallow	*Petrochelidon pyrrhonota*	Abundant
Common Goldeneye	*Bucephala clangula*	Unknown
Common Grackle	*Quiscalus quiscula*	Uncommon
Common Loon	*Gavia immer*	Unknown
Common Merganser	*Mergus merganser*	Fairly Common
Common Nighthawk	*Chordeiles minor*	Common
Common Poorwill	*Phalaenoptilus nuttallii*	Uncommon
Common Raven	*Corvus corax*	Fairly Common
Common Redpoll	*Carduelis flammea*	No Occurrence
Common Snipe	*Gallinago gallinago*	Fairly Common
Common Yellowthroat	*Geothlypis trichas*	Uncommon
Cooper's Hawk	*Accipiter cooperii*	Uncommon
Cordilleran Flycatcher	*Empidonax occidentalis*	Fairly Common
Dark-eyed Junco	*Junco hyemalis*	Common
Dickcissel	*Spiza americana*	Unknown
Downy Woodpecker	*Picoides pubescens*	Uncommon
Dusky Flycatcher	*Empidonax oberholseri*	Fairly Common
Eastern Kingbird	*Tyrannus tyrannus*	Uncommon
European Starling	*Sturnus vulgaris*	Abundant
Evening Grosbeak	*Coccothraustes vespertinus*	Uncommon
Ferruginous Hawk	*Buteo regalis*	Unknown
Flammulated Owl	*Otus flammeolus*	Uncommon
Fox Sparrow	*Passerella iliaca*	Fairly Common
Franklin's Gull	*Larus pipixcan*	Unknown
Gadwall	*Anas strepera*	Fairly Common
Golden Eagle	*Aquila chrysaetos*	Fairly Common
Golden-crowned Kinglet	*Regulus satrapa*	Uncommon
Gray Catbird	*Dumetella carolinensis*	Uncommon
Gray Jay	*Perisoreus canadensis*	Uncommon
Gray-crowned Rosy Finch	*Leucosticte tephrocotis*	Unknown
Great Blue Heron	*Ardea herodias*	Common
Great Horned Owl	*Bubo virginianus*	Fairly Common
Greater Sandhill Crane	*Grus canadensis tabida*	Fairly Common
Greater Yellowlegs	*Tringa melanoleuca*	Unknown
Green-tailed Towhee	*Pipilo chlorurus*	Common
Green-winged Teal	*Anas crecca*	Fairly Common
Hairy Woodpecker	*Picoides villosus*	Uncommon
Hammond's Flycatcher	*Empidonax hammondii*	Uncommon
Harris' Sparrow	*Zonotrichia querula*	No Occurrence
Hermit Thrush	*Catharus guttatus*	Common
Horned Grebe	*Podiceps auritus*	No Occurrence
Horned Lark	*Eremophila alpestris*	Common
House Finch	*Carpodacus mexicanus*	Common
House Sparrow	*Passer domesticus*	Common
House Wren	*Troglodytes aedon*	Common
Killdeer	*Charadrius vociferus*	Fairly Common

TABLE 6.5-1
Birds Potentially Present in Routt County, Colorado
Emerald Mountain Land Exchange

Common Name	Scientific Name	Abundance
Lapland Longspur	*Calcarius lapponicus*	Unknown
Lark Bunting	*Calamospiza melanocorys*	Rare
Lark Sparrow	*Chondestes grammacus*	Fairly Common
Lazuli Bunting	*Passerina amoena*	Fairly Common
Least Sandpiper	*Calidris minutilla*	Unknown
Lesser Goldfinch	*Carduelis psaltria*	Uncommon
Lesser Scaup	*Aythya affinis*	Unknown
Lesser Yellowlegs	*Tringa flavipes*	Unknown
Lewis' Woodpecker	*Melanerpes lewis*	Very Rare
Lincoln's Sparrow	*Melospiza lincolnii*	Fairly Common
Loggerhead Shrike	*Lanius ludovicianus*	Uncommon
Long-billed Dowitcher	*Limnodromus scolopaceus*	Unknown
Long-eared Owl	*Asio otus*	Uncommon
MacGillivray's Warbler	*Oporornis tolmiei*	Uncommon
Mallard	*Anas platyrhynchos*	Common
Marbled Godwit	*Limosa fedoa*	No Occurrence
Marsh Wren	*Cistothorus palustris*	Uncommon
Mountain Bluebird	*Sialia currucoides*	Fairly Common
Mountain Chickadee	*Poecile gambeli*	Common
Mourning Dove	*Zenaida macroura*	Common
Nashville Warbler	*Vermivora ruficapilla*	Unknown
Northern Flicker	*Colaptes auratus*	Fairly Common
Northern Goshawk	*Accipiter gentilis*	Rare
Northern Harrier	*Circus cyaneus*	Uncommon
Northern Mockingbird	*Mimus polyglottos*	Rare
Northern Pintail	*Anas acuta*	Rare
Northern Pygmy-Owl	*Glaucidium gnoma*	Unknown
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	Uncommon
Northern Saw-whet Owl	*Aegolius acadicus*	Unknown
Northern Shoveler	*Anas clypeata*	Unknown
Northern Waterthrush	*Seiurus noveboracensis*	Unknown
Olive-sided Flycatcher	*Contopus cooperi*	Uncommon
Orange-crowned Warbler	*Vermivora celata*	Fairly Common
Osprey	*Pandion haliaetus*	Rare
Pacific Loon	*Gavia pacifica*	No Occurrence
Pectoral Sandpiper	*Calidris melanotos*	No Occurrence
Peregrine Falcon	*Falco peregrinus*	Unknown
Pied-billed Grebe	*Podilymbus podiceps*	Uncommon
Pine Grosbeak	*Pinicola enucleator*	Fairly Common
Pine Siskin	*Carduelis pinus*	Common
Plains Sharp-tailed Grouse	*Tympanuchus phasianellus jamesii*	Uncommon
Plumbeous Vireo	*Vireo plumbeus*	Fairly Common
Prairie Falcon	*Falco mexicanus*	Uncommon
Purple Martin	*Progne subis*	Uncommon
Red Crossbill	*Loxia curvirostra*	Uncommon
Red-breasted Merganser	*Mergus serrator*	No Occurrence
Red-breasted Nuthatch	*Sitta canadensis*	Fairly Common
Redhead	*Aythya americana*	Uncommon
Red-headed Woodpecker	*Melanerpes erythrocephalus*	Unknown

TABLE 6.5-1
Birds Potentially Present in Routt County, Colorado
Emerald Mountain Land Exchange

Common Name	Scientific Name	Abundance
Red-naped Sapsucker	*Sphyrapicus nuchalis*	Uncommon
Red-necked Phalarope	*Phalaropus lobatus*	Unknown
Red-tailed Hawk	*Buteo jamaicensis*	Fairly Common
Red-winged Blackbird	*Agelaius phoeniceus*	Abundant
Ring-billed Gull	*Larus delawarensis*	Unknown
Ring-necked Duck	*Aythya collaris*	Fairly Common
Rock Dove	*Columba livia*	Fairly Common
Rock Wren	*Salpinctes obsoletus*	Uncommon
Rough-legged Hawk	*Buteo lagopus*	Unknown
Ruby-crowned Kinglet	*Regulus calendula*	Common
Ruddy Duck	*Oxyura jamaicensis*	Rare
Rufous Hummingbird	*Selasphorus rufus*	Unknown
Sabine's Gull	*Xema sabini*	No Occurrence
Sage Grouse	*Centrocercus urophasianus*	Fairly Common
Sage Sparrow	*Amphispiza belli*	Uncommon
Sage Thrasher	*Oreoscoptes montanus*	Uncommon
Sandhill Crane	*Grus canadensis*	Fairly Common
Savannah Sparrow	*Passerculus sandwichensis*	Fairly Common
Say's Phoebe	*Sayornis saya*	Uncommon
Scissor-tailed Flycatcher	*Tyrannus forficatus*	Unknown
Semipalmated Plover	*Charadrius semipalmatus*	Unknown
Semipalmated Sandpiper	*Calidris pusilla*	No Occurrence
Sharp-shinned Hawk	*Accipiter striatus*	Uncommon
Sharp-tailed Grouse	*Tympanuchus phasianellus*	Uncommon
Snow Bunting	*Plectrophenax nivalis*	Unknown
Snow Goose	*Chen caerulescens*	No Occurrence
Snowy Owl	*Nyctea scandiaca*	No Occurrence
Solitary Sandpiper	*Tringa solitaria*	Unknown
Song Sparrow	*Melospiza melodia*	Fairly Common
Sora	*Porzana carolina*	Uncommon
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	Fairly Common
Spotted Sandpiper	*Actitis macularia*	Fairly Common
Spotted Towhee	*Pipilo maculatus*	Common
Steller's Jay	*Cyanocitta stelleri*	Fairly Common
Stilt Sandpiper	*Calidris himantopus*	No Occurrence
Swainson's Hawk	*Buteo swainsoni*	Fairly Common
Swainson's Thrush	*Catharus ustulatus*	Fairly Common
Three-toed Woodpecker	*Picoides tridactylus*	Uncommon
Townsend's Solitaire	*Myadestes townsendi*	Uncommon
Townsend's Warbler	*Dendroica townsendi*	No Occurrence
Tree Swallow	*Tachycineta bicolor*	Common
Tundra Swan	*Cygnus columbianus*	No Occurrence
Turkey Vulture	*Cathartes aura*	Fairly Common
Veery	*Catharus fuscescens*	Uncommon
Vesper Sparrow	*Pooecetes gramineus*	Common
Violet-green Swallow	*Tachycineta thalassina*	Common
Virginia Rail	*Rallus limicola*	Uncommon
Virginia's Warbler	*Vermivora virginiae*	Fairly Common
Warbling Vireo	*Vireo gilvus*	Common
Western Bluebird	*Sialia mexicana*	Uncommon

TABLE 6.5-1
Birds Potentially Present in Routt County, Colorado
Emerald Mountain Land Exchange

Common Name	Scientific Name	Abundance
Western Burrowing Owl	*Athene cunicularia*	Unknown
Western Kingbird	*Tyrannus verticalis*	Fairly Common
Western Meadowlark	*Sturnella neglecta*	Common
Western Sandpiper	*Calidris mauri*	Unknown
Western Screech-Owl	*Otus kennicottii*	Unknown
Western Scrub Jay	*Aphelocoma californica*	Uncommon
Western Tanager	*Piranga ludoviciana*	Fairly Common
Western Wood-Pewee	*Contopus sordidulus*	Fairly Common
White-breasted Nuthatch	*Sitta carolinensis*	Fairly Common
White-crowned Sparrow	*Zonotrichia leucophrys*	Common
White-faced Ibis	*Plegadis chihi*	Unknown
White-rumped Sandpiper	*Calidris fuscicollis*	Unknown
White-tailed Ptarmigan	*Lagopus leucurus*	Rare
White-throated Sparrow	*Zonotrichia albicollis*	No Occurrence
White-throated Swift	*Aeronautes saxatalis*	Fairly Common
White-winged Crossbill	*Loxia leucoptera*	Unknown
Whooping Crane	*Grus americana*	No Occurrence
Williamson's Sapsucker	*Sphyrapicus thyroideus*	Uncommon
Willow Flycatcher	*Empidonax traillii*	Fairly Common
Wilson's Phalarope	*Phalaropus tricolor*	Fairly Common
Wilson's Warbler	*Wilsonia pusilla*	Common
Winter Wren	*Troglodytes troglodytes*	Unknown
Wood Duck	*Aix sponsa*	Rare
Yellow Warbler	*Dendroica petechia*	Fairly Common
Yellow-billed Cuckoo	*Coccyzus americanus*	Casual/ Accidental
Yellow-breasted Chat	*Icteria virens*	Uncommon
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*	Common
Yellow-rumped Warbler	*Dendroica coronata*	Common

TABLE 6.5-2
Size Class Distribution of Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Size (Acres)	Number of Parcels
1 - 31	29
35 - 98	65
101 - 186	14
200 - 388	9
425 - 597	5
756 - 972	3
> 1,000	2

TABLE 6.6-1
Federally Listed and Candidate Species#
Emerald Mountain Land Exchange

Scientific Name	Common Name	Federal Status	County: Moffat	County: Routt
Amphibians				
Bufo boreas boreas	Boreal toad	Candidate	X	X
Birds				
Coccyzus americanus	Yellow-billed cuckoo	Candidate	X	X
Haliaeetus leucocephalus	Bald eagle	Threatened	X	X
Strix occidentalis lucida	Mexican spotted owl	Threatened	X	
Fish				
Gila cypha	Humpback chub	Endangered	8	*
Gila elegans	Bonytail chub	Endangered	8	*
Ptychocheilus lucius	Colorado pikeminnow	Endangered	8	*
Xyrauchen texanus	Razorback sucker	Endangered	8	*
Mammals				
Lynx canadensis	North American lynx	Threatened	X	X
Mustel nigripes	Black-footed ferret	Endangered	X	
Plants				
Spiranthes diluvialis	Ute Ladies' Tresses Orchid	Threatened	X	X

Legend

X The X indicates that the species is present in that county or that the county is within the historical range of the species.

* Water depletions in these counties may affect these species.

8 This sign means that the species is present in the county and there is designated critical habitat for the species within the county.

\# March 29, 2004 U.S. Fish & Wildlife Service List of Federally Listed and Candidate Species for Moffat and Routt Counties, Colorado.

TABLE 6.7-1
BLM Sensitive Species
Little Snake Field Office
Emerald Mountain Land Exchange

Scientific Name	Common Name	Global Rarity	State Rarity	USFS/ CDOW	Potentially Present
Mammals					
Euderma maculatum	Spotted bat	G4	S2	FS	
Birds					
Accipter gentilis	Northern goshawk	G5	S3S3BS2N	FS	Yes
Bucephala islandica	Barrow's goldeneye	G5	S2BSZN	SC	
Buteo regalis	Ferruginous hawk	G4	S3BS4N	FS, SC	Yes
Centrocercus Urophasianus	Sage grouse	G5	S4	SC	Yes
Charadrius montanus	Mountain plover	G2	S2BSZN	FS, SC	
Chlidonias niger	Black tern	G4	S3S4BSZN	FS	
Numenius americanus	Long-billed curlew	G5	S2BSZN	FS, SC	
Plegadis chihi	White-faced ibis	G5	S2BSZN	FS	
Tympanuchus phasianellus columbian	Columbian sharp-tailed grouse	G4G3	S2	FS	Yes
Fish					
Catostomas latipinnis	Flannelmouth sucker	G3G4	S3S4	SC	
Catostomas platyrhynchus	Mountain sucker	G5	S2	SC	
Gila robusta	Roundtail chub	G2G3	S2	SC	
Reptiles					
Crotalus viridis concolor	Midget faded rattlesnake	G5T4	S3?	SC	Yes
Amphibians					
Spea intermontana	Great Basin spadefoot	G5	S3	SC	
Plants					
Astragalus aretoides	Cushion milkvetch	G4	S1		
Astragalus detritalis	Debris milkvetch	G3	S2		
Astragalus duchesnensis	Duchesne milkvetch	G3	S1S2		
Astragalus jejunus	Starvling milkvetch	G3	S1		
Astragalus nelsonianus	Nelson milkvetch	G3	S1		
Cirsium ownbeyi	Ownbey's thistle	G3	S3		
Cirsium perplexans	Rocky Mountain thistle	G3	S1		
Cryptantha cespitosa	Tufted cryptanth	G3	S2		
Cymopterus duchesnesi	Uinta Basin spring-parsley	G3	S1		
Eriogonum acaule	Single-stemmed wild buckwheat	G3	S1		
Eriogonum tumulosum	Woodside buckwheat	G3	S2		
Eriogonum viridulum	Duchesne buckwheat	G4Q	S1		
Minutaria nuttallii	Nuttall sandwort	G5	S1		
Nama densum var. parviflorum	Matted fiddleleaf	G5	S1		
Oenothera acutissima	Narrowleaf evening primrose	G2	S2		
Parthenium ligulatum	Ligulate feverfew	G3	S2		

TABLE 6.7-1
BLM Sensitive Species
Little Snake Field Office
Emerald Mountain Land Exchange

Scientific Name	Common Name	Global Rarity	State Rarity	USFS/ CDOW	Potentially Present
Penstemon gibbensii	Gibbin's penstemon	G1	S1		
Spaeromeria capitata	Rock-tansey	G3	S1		
Townsendia strigosa	Strigose easter-daisy	G4	S1		
Trifolium andinum	Mountain clover	G3	S1		

The source used to assign status is from:
Colorado's Natural Heritage: Rare and Imperiled Animals, Plants, and Plant Communities; Vol.3, No.1, 10/1997.
Colorado's Threatened, Endangered, and Special Concern Wildlife; May/98.
Conservation Status Handbook: Colorado's Animals, Plants and Plant Communities of Special Concern Vol. 3, No.2, 5/1999.

Colorado Natural Heritage Program (CNHP) Rarity Ranking
Global Rarity Ranking is based on the range-wide status of a species.
G1-Critically imperiled globally because of extreme rarity (5 or fewer occurrences, or very few remaining individuals), or because of some factor of its biology making it especially vulnerable to extinction. (Critically endangered throughout its range).
G2-Imperiled globally because of rarity (6 to 20 occurrences), or because of other factors demonstrably making it very vulnerable to extinction throughout its range. (Endangered throughout its range).
G3-Very rare or local throughout its range or found locally in a restricted range (21 to 100 occurrences). (Threatened throughout its range).
G4-Apparently secure globally, though it might be quite rare in parts of its range, especially at the periphery.
G5-Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
T-Taxa of subspecies or varieties, ranked on same criteria as G1-G5.

State Rarity Ranking is based on the status of a species (relative abundance of individuals) in each state.
S1-Critically imperiled in state because of extreme rarity (5 or fewer occurrences, or very few remaining individuals), or because of some factor of its biology making it especially vulnerable to extirpation from the state. (Critically endangered in state).
S2-Imperiled in state because of rarity (6 to 20 occurrences), or because of other factors demonstrably making it very vulnerable to extirpation from the state. (Endangered or threatened in state).
S3-Rare in state (21 to 100 occurrences).
S#B-Refers to the breeding season imperilment of elements that are not permanent residents.
S#N-Refers to the non-breeding season imperilment of elements that are not permanent residents. Where no consistent location can be discerned for migrants or non-breeding populations, a rank of SZN is used.
SZ-Migrant whose occurrences are too irregular, transitory, and/or dispersed to be reliably identified, mapped, and protected.

U.S. Forest Service, Region 2 (USFS)
FS - Sensitive: those plant and animal species identified by the Regional Forester for which population viability is a concern as evidenced by:
a. Significant current or predicated downward trends in population numbers or density.
b. Significant current or predicated downward trends in habitat capability that would reduce a species' existing distribution.

Colorado Division of Wildlife (CDOW)
SC - Species of Special Concern

TABLE 6.7-2
BLM Sensitive Plants & Habitat & Distributional Data
Emerald Mountain Land Exchange

Scientific Name	Common Name	Habitat & Vegetation Types	Elevation Range (Feet)	Colorado Distribution by County
Astragalus aretioides (Orophaca aretioides)	Cushion milkvetch	Gypsum soils, sagebrush	6,500-7,000	Moffat
Astragalus detritalis	Debris milkvetch	Pinyon juniper, desert shrub, sagebrush zone	5,400-7,200	Moffat & Rio Blanco
Astragalus duchesnensis	Duchesne milkvetch	Pinyon juniper & desert shrub	4,600-6,400	Moffat & Rio Blanco
Astragalus jejunus	Starvling milkvetch	Juniper & sagebrush, dry hilltops, gullied bluffs, barren ridges or river terraces, tuff, shale, sandstone or clay	5,500-7,500	Moffat
Astragalus nelsonianus	Nelson milkvetch	Seleniferous soils, gullies and flats	6,000-7,000	Moffat
Cirsium ownbeyi	Ownbey's thistle	Juniper, sagebrush, riparian canyonsides	5,500-6,200	Moffat
Cirsium perplexans	Adobe thistle	Open areas and disturbed sites in mixed shrublands & pinyon-juniper woodlands, adobe & gypsum hills, Mancos shale, steep slopes	5,000-8,000	Delta, Mesa, Montrose, Ouray
Cryptantha caespitosa (Oreocarya caespitosa)	Tufted cryptanth	Juniper, adobe & gypsum hills, clay soils, steep bluffs of Green River formation	6,800-8,100	Moffat, Rio Blanco
Cymopterus duchesnenis	Uinta Basin spring-parsley	Juniper & sagebrush, clay buttes	5,500-6,800	Moffat, Rio Blanco
Eriogonum acaule	Stemless wild buckwheat	Clay hills, barren hillsides, in fine particle soils	5,680-6,820	Moffat
Eriogonum tumulosum	Woodside buckwheat	Pinyon juniper & desert shrub	5,800-6,300	Moffat

TABLE 6.7-2
BLM Sensitive Plants & Habitat & Distributional Data
Emerald Mountain Land Exchange

Scientific Name	Common Name	Habitat & Vegetation Types	Elevation Range (Feet)	Colorado Distribution by County
Eriogonum viridulum	Duchesne buckwheat	Clay banks along streams & rivers	5,000	Moffat
Minutaria nuttallii (Minuopsis nuttallii)	Nuttall sandwort	Sagebrush-saltbush stands on gravelly slopes	7,500-8,000	Moffat & Rio Blanco
Nama densum var. parviflorum	Matted fiddleleaf	Juniper, sagebrush & desert shrub, shifting sandy soils	5,500-6,500 estimated	Moffat
Oenothera acutissima	Narrowleaf evening primrose	Seasonally moist areas, sagebrush & ponderosa pine forests	5,300-8,500	Moffat
Parthenium ligulatum (Bolophyta ligulata)	Ligulate feverfew	Barren clay hills, alkaline soils, gypsum ridges	5,000-6,400	Moffat & Rio Blanco
Penstemon gibbensii	Gibbin's penstemon	Pinyon juniper, sagebrush, greasewood/saltbush	5,500-7,700	Moffat
Sphaeromeria capitata	Rock-tansy	Dry, rocky hills and desert flats, silty soils	7,500-7,900	Moffat
Townsendia strigosa	Strigose easter-daisy	Pinyon juniper, clay hills	6,500-7,000	Mesa, Moffat, Montezuma
Trifolium andinum	Mountain clover	Ponderosa pine, mixed shrub	5,700-7,300	Moffat

Sources:

Fertig, W., C. Refsdal, and J. Whipple. 1994. Wyoming Rare Plant Field Guide. Wyoming Rare Plant Technical Committee, Cheyenne. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. http://www.npwrc.usgs.gov/resource/tools/wyplant/wyplant.htm

NatureServe Explorer: An Online Encyclopedia of Life. http://www.natureserve.org/explorer/

Spackman, S. et al. 1997. Colorado Rare Plant Field Guide, prepared for the U.S. Bureau of Land Management, U.S. Forest Service, & U.S. Fish & Wildlife Service. Colorado Natural Heritage Program.

Spackman, S., and David G. Anderson. 2002. Colorado Rare Plant Field Guide 2002 Update. Prepared for the Bureau of Land Management, The U.S. Forest Service, and the U.S. Fish and Wildlife Service by the Colorado Natural Heritage Program.

Utah Native Plant Society. 2003-2005. Utah Rare Plant Guide. Salt Lake City, UT. Utah Rare Plant Home Page http://www.utahrarerplants.org

University of Colorado Herbarium (COLO). Specimen Database of Colorado Vascular Plants. http://cumuseum.colorado.edu/Research/Botany/Databases/search.php

Weber, W. A. and R. C. Whitmann. 2001. Colorado Flora: Western Slope, Third edition. University Press of Colorado. Boulder, Colorado.

Welsh, Stanley L., et al. 1987. A Utah Flora. Brigham Young University. Great Basin Naturalist Memoirs.

TABLE 6.9-1
Riparian-Wetland Habitats
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Riparian-Wetland Name	Riparian-Wetland Area (sq. feet)	Riparian-Wetland Area (acres)	Riparian-Wetland Type[+]	PFC[++]	Description
2	Little Snake River	918,847	21.09	Lotic	yes	Mature narrowleaf cottonwood forest along river.
2	Tributary to Little Snake River	10,261	0.24	Lotic	yes	Herbaceous wetland vegetation with scattered willows.
	Total Parcel 2	**929,108**	**21.33**			
3	Butter Lake	104,183	2.39	Lentic	FAR	Herbaceous wetlands around Butter Lake.
3	Spring wetland east of Butter Lake	21,497	0.49	Lentic	FAR	Spring-fed herbaceous and willow shrub wetland east of Butter Lake.
	Total Parcel 3	**125,680**	**2.88**			
6	Tributary to Cantling Creek	134,282	3.08	Lotic	FAR	Two stock ponds and herbaceous wetlands with isolated shrubs along an ephemeral tributary to Cantling Creek.
11	Unnamed tributary to Steamboat Lake	18,828	0.43	Lotic	yes	Wetlands and perennial stock pond along ephemeral tributary. The wetlands are mainly herbaceous although some aspen wetland and willow shrub wetland also exist.
11	Dutch Gulch	16,404	0.38	Lotic	yes	Alders and occasional willows with herbaceous understory along perennial stream.
11	Seeps south of Dutch Gulch	7,487	0.17	Lentic	yes	Willow shrub and herbaceous wetlands at isolated seepage areas.*
	Total Parcel 11	**42,719**	**0.98**			
12	Unnamed tributary to Red Creek	3,243	0.07	Lotic	yes	Herbaceous wetlands along ephemeral stream.

TABLE 6.9-1
Riparian-Wetland Habitats
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Riparian-Wetland Name	Riparian-Wetland Area (sq. feet)	Riparian-Wetland Area (acres)	Riparian-Wetland Type[+]	PFC[++]	Description
13	Unnamed tributary to Ways Gulch	65,444	1.50	Lotic	yes	Willow and subalpine fir wetland and riparian habitat along ephemeral stream.
14	Unnamed tributary to Steamboat Lake	118,766	2.73	Lotic	yes	Willow shrubland riparian and wetland habitat with isolated cottonwoods around pond along tributary to lake.
14	Deep Creek	51,231	1.18	Lotic	yes	Willow shrubland riparian and wetland habitat along ephemeral stream.
14	Tributary to Deep Creek	34,473	0.79	Lotic	yes	Willow shrubland riparian and wetland habitat along ephemeral stream.
	Total Parcel 14	**204,470**	**4.70**			
15	Drainage swale to Pearl Lake	30,688	0.70	Lotic	yes to FAR	Willow shrubland with an upland understory in swale, no wetlands present.
16	Various isolated stock ponds	36,956	0.85	Lentic	yes to FAR	Narrow band of herbaceous wetlands around isolated perennial stock ponds.*
16	Beaver Dam complex	18,298	0.42	Lentic	FAR	Series of three beaver dam wetlands with breached dams along in a drainage swale.
16	Stock pond and unnamed drainage to Elkhead Creek	4,241	0.10	Lotic/Lentic	FAR	Willow shrub and herbaceous wetlands around the edge of a perennial stock pond.
	Total Parcel 16	**59,495**	**1.37**			
17	Tributary to N. Fork Elkhead Creek	17,530	0.40	Lotic	yes	Herbaceous wetlands through aspen and sagebrush.

TABLE 6.9-1
Riparian-Wetland Habitats
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Riparian-Wetland Name	Riparian-Wetland Area (sq. feet)	Riparian-Wetland Area (acres)	Riparian-Wetland Type[+]	PFC[++]	Description
19	Isolated stock pond and wetland	10,357	0.24	Lentic	yes	Isolated herbaceous wetlands and an ephemeral stock pond.*
20	Elkhead Creek	368,925	8.47	Lotic	FAR	Mature narrowleaf cottonwood forest with isolated grazed shrubs along perennial stream.
20	Tributary to Elkhead Creek	107,171	2.46	Lotic	yes	Forested riparian habitat with aspen, blue spruce, and dogwood along ephemeral stream.
20	Seep to Elkhead Creek	17,014	0.39	Lentic	yes	Scattered willows and herbaceous wetland plants at a seep.
	Total Parcel 20	**493,110**	**11.32**			
21	Red Creek	21,645	0.50	Lotic	FAR	Herbaceous wetland vegetation and scattered willows along meandering perennial stream.
21	Pond and overflow channel	16,995	0.39	Lotic	yes	Dense water sedge and other graminoids around small perennial pond.
21	Swale South of Red Creek	1,470	0.03	Lotic	yes	Dense stands of sedges and other wetland plants in swale.
21	Seep North of Red Creek	834	0.02	Lotic	yes	Small drainage swale and seep with herbaceous wetland and upland plants.
	Total Parcel 21	**40,944**	**0.94**			
22A	Beaver pond	97,671	2.24	Lentic	yes	Herbaceous and willow shrub riparian/wetland complex around old beaver ponds.

TABLE 6.9-1
Riparian-Wetland Habitats
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Riparian-Wetland Name	Riparian-Wetland Area (sq. feet)	Riparian-Wetland Area (acres)	Riparian-Wetland Type[+]	PFC[++]	Description
22A	E. Fork Smith Creek	9,273	0.21	Lotic	yes	Alder riparian/wetland complex along perennial stream.
	Total Parcel 22A	106,944	2.45			
24	Elkhead Creek	705,323	16.19	Lotic	yes	Scattered narrowleaf cottonwoods, alders, and other shrubs along perennial stream.
24	North Fork Elkhead Creek	65,827	1.51	Lotic	yes	Blue spruce and narrowleaf cottonwood forests along perennial stream.
24	Unnamed tributary to Elkhead Creek	51,722	1.19	Lotic	yes	Isolated stands of narrowleaf cottonwood with oak, snowberry, serviceberry, chokecherry along ephemeral stream.
	Total Parcel 24	822,872	18.89			
26	Springs north of Elkhead Creek	105,523	2.42	Lotic	yes	Young cottonwoods, willows, and herbaceous wetlands at springs north of creek.
26	Elkhead Creek	62,525	1.44	Lotic	yes	Blue spruce and narrowleaf cottonwood forests along perennial stream.
	Total Parcel 26	168,048	3.86			
27	Elkhead Creek	432,179	9.92	Lotic	yes	Narrowleaf cottonwood forests with isolated blue spruce along perennial stream.
28	Elkhead Creek (north part)	366,394	8.41	Lotic	yes	Narrowleaf cottonwood forests with isolated blue spruce along perennial stream.

TABLE 6.9-1
Riparian-Wetland Habitats
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Riparian-Wetland Name	Riparian-Wetland Area (sq. feet)	Riparian-Wetland Area (acres)	Riparian-Wetland Type[+]	PFC[++]	Description
28	Elkhead Creek (west part)	100,464	2.31	Lotic	yes	Narrowleaf cottonwood forests with isolated blue spruce along perennial stream.
	Total Parcel 28	**466,858**	**10.72**			
37	Unnamed drainage to Miller Creek	15,618	0.36	Lotic	yes	Herbaceous wetland vegetation with scattered subalpine fir along intermittent stream.
38	Two Isolated wetlands one with pond	33,530	0.77	Lentic	yes	Isolated herbaceous wetland seeps in openings of aspen forest.*
39	Unnamed wetland near jeep trail	541	0.01	Lentic	yes	Small isolated herbaceous wetland in opening of aspen and subalpine fir.*
40	Isolated beaver ponds and wetlands	20,038	0.46	Lentic	FAR	Herbaceous wetlands around heavily grazed isolated beaver ponds.*
40	Pond along north ephemeral tributary to Morgan Creek	19,188	0.44	Lentic	FAR	Herbaceous wetland vegetation around perennial stock pond.
	Total Parcel 40	**39,226**	**0.90**			
40A	Unnamed tributary to Dutch Gulch.	7,858	0.18	Lotic	yes	Scattered willows and herbaceous wetland plants along perennial stream.
40A	Isolated wetland 2	7,850	0.18	Lentic	no	Herbaceous isolated wetland seep.*
40A	Isolated wetland 1	2,000	0.05	Lentic	FAR	Herbaceous isolated wetland seep.*
	Total Parcel 40A	**17,708**	**0.41**			
41	Two unnamed lily ponds	62,895	1.44	Lentic	yes	Isolated herbaceous wetland vegetation around two natural perennial ponds.*

TABLE 6.9-1
Riparian-Wetland Habitats
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Riparian-Wetland Name	Riparian-Wetland Area (sq. feet)	Riparian-Wetland Area (acres)	Riparian-Wetland Type[+]	PFC[++]	Description
42	Day Creek	648,475	14.89	Lotic	yes	Willows, alders, subalpine fir and Engelmann spruce along perennial stream.
42	Two unnamed ephemeral tributaries	8,157	0.19	Lotic	yes	Herbaceous wetland vegetation in a narrow band along ephemeral streams. A spring is also present.
	Total Parcel 42	**656,632**	**15.08**			
44	Unnamed isolated wetland	16,717	0.38	Lentic	yes	Isolated herbaceous wetland seep in opening of aspen forest.*
46	Wetland drainage to Deep Creek and stock pond	10,066	0.23	Lotic	yes	Herbaceous wetlands above and below stock pond.
47	McPhee Creek	41,263	0.95	Lotic	yes	Herbaceous wetlands in drainage swale.
47	Isolated wetland	8,000	0.18	Lentic	yes	Isolated herbaceous wetland.*
47	Semipermanent aquatic site	2,500	0.06	Lentic	FAR	Isolated semi permanent aquatic site with herbaceous wetland vegetation.*
	Total Parcel 47	**51,763**	**1.19**			
48	Dutch Gulch	15,501	0.36	Lotic	yes	Herbaceous wetlands and pond along perennial stream.
50	Taylor Creek	618,784	14.21	Lotic	yes	Subalpine fir, aspen, and a few cottonwoods along perennial stream.

TABLE 6.9-1
Riparian-Wetland Habitats
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Riparian-Wetland Name	Riparian-Wetland Area (sq. feet)	Riparian-Wetland Area (acres)	Riparian-Wetland Type[+]	PFC[++]	Description
50	Franz Creek	133,074	3.05	Lotic	yes	Riparian habitat along ephemeral stream includes an overstory of subalpine fir and Douglas fir, with occasional stands of narrowleaf cottonwood and aspen. There are numerous riparian shrubs and scattered wetland herbaceous species, but there is not a predominance of hydrophytes.
	Total Parcel 50	**751,858**	**17.26**			
52	Unnamed drainage to Dry Fork Elkhead Creek	35,800	0.82	Lotic	yes	Herbaceous wetland vegetation along ephemeral stream.
52	Unnamed drainage swale and stock pond	2,862	0.07	Lotic	yes	Herbaceous wetland vegetation in swale and around perennial stock pond.
	Total Parcel 52	**38,662**	**0.89**			
54	Elkhead Creek	249,058	5.72	Lotic	yes	Herbaceous wetlands with isolated cottonwoods along perennial stream.
58	Fish Creek	184,812	4.24	Lotic	yes	Herbaceous wetland vegetation along stream.
58	Schaefermeyer Reservoir No. 4	90,036	2.07	Lentic	FAR	Herbaceous wetland vegetation around pond including one seep.
58	Pond north of Fish Creek	46,612	1.07	Lentic	yes	Herbaceous wetland vegetation around small isolated pond.*
58	Spring southeast of reservoir	42,652	0.98	Lentic	yes	Series of four isolated ponds with herbaceous wetland vegetation.*
58	Wetland northeast of reservoir	7,996	0.18	Lentic	FAR	Disturbed wetland with recent beaver

TABLE 6.9-1
Riparian-Wetland Habitats
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Riparian-Wetland Name	Riparian-Wetland Area (sq. feet)	Riparian-Wetland Area (acres)	Riparian-Wetland Type[+]	PFC[++]	Description
						activity.
58	Seep east of spring	250	0.01	Lentic	yes	Herbaceous isolated wetland in opening of aspen forest.*
	Total Parcel 58	**372,358**	**8.55**			
59	Unnamed pond and associated wetlands	35,647	0.82	Lentic	FAR	Herbaceous wetlands around and near perennial pond.
59	Tributary to Wolf Creek	1,794	0.04	Lotic	yes	Herbaceous wetland along unnamed drainage to Wolf Creek in north.
	Total Parcel 59	**37,441**	**0.86**			
66	South Tributary to Chimney Creek	117,982	2.71	Lotic	yes	Herbaceous wetland adjacent and through subalpine fir forest.
66	North Tributary to Chimney Creek	88,900	2.04	Lotic	yes	Herbaceous wetland adjacent and through subalpine fir forest.
	Total Parcel 66	**206,882**	**4.75**			
68	Pond along tributary to Salt Creek	12,941	0.30	Lotic	FAR	Narrow band of herbaceous wetland vegetation around perennial stock pond.
68	Salt Creek	1,670	0.04	Lotic	yes	Narrow band of herbaceous wetland vegetation along an ephemeral stream.
	Total Parcel 68	**14,611**	**0.34**			
69	Tributary to Salt Creek	42,254	0.97	Lentic	yes	Four springs and associated wetlands along drainages to Salt Creek.
71	Tow Creek	51,414	1.18	Lotic	FAR	Scattered narrowleaf cottonwoods and willows along a perennial stream.

TABLE 6.9-1
Riparian-Wetland Habitats
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Riparian-Wetland Name	Riparian-Wetland Area (sq. feet)	Riparian-Wetland Area (acres)	Riparian-Wetland Type[+]	PFC[++]	Description
73	Ephemeral wetland swale leading to Smuin Gulch	5,760	0.13	na	yes	Herbaceous wetland and upland vegetation in isolated swale.*
76	Wetland swale leading to Fish Creek	20,175	0.46	Lotic	yes	Herbaceous wetland vegetation in drainage swale.
80	East Ephemeral tributary to Sage Creek	20,066	0.46	Lotic	yes	Herbaceous wetland vegetation along ephemeral drainage swale, intermittent pools of water
80	West Ephemeral tributary to Sage Creek	6,656	0.15	Lotic	yes	Aspen wetland with mixed understory
	Total Parcel 80	**26,722**	**0.61**			
82A	Isolated wetland seep	4,416	0.10	Lentic	yes	Herbaceous isolated wetland seep.*
85	Sage Creek	81,828	1.88	Lotic	yes	Hayfield wetlands and scrub-shrub alder and willow wetlands
93	Unnamed drainage swale to Salt Creek	2,813	0.06	Lentic	FAR	Small redtop dominated wetland and ephemeral stock pond, no bed and bank along drainage
94	Unnamed ephemeral tributary to Willow Creek	24,699	0.57	Lotic	FAR	Herbaceous wetlands around perennial stock pond and in ephemeral stream.
94	Willow Creek	12,360	0.28	Lotic	FAR	Isolated willows and herbaceous wetlands along incised perennial stream.
	Total Parcel 94	**37,059**	**0.85**			
98	Unnamed perennial stream east of Willow Creek	82,300	1.89	Lotic	yes	Forested and shrub wetlands along perennial stream with aspen, cottonwoods, alders and willows.

TABLE 6.9-1
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Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Riparian-Wetland Name	Riparian-Wetland Area (sq. feet)	Riparian-Wetland Area (acres)	Riparian-Wetland Type[+]	PFC[++]	Description
98	Willow Creek	65,175	1.50	Lotic	yes	Forested and shrub wetlands along perennial stream with aspen, cottonwoods, alders and willows.
98	Unnamed seep	27,117	0.62	Lentic	yes	Herbaceous wetland seep with scattered alders and subalpine fir.
	Total Parcel 98	**174,592**	**4.01**			
99	Tributary to Yoast Gulch	20,835	0.48	Lotic	yes	Herbaceous wetlands along ephemeral stream.
99	Yoast Gulch	4,988	0.11	Lotic	yes	Herbaceous wetlands along perennial stream.
	Total Parcel 99	**25,823**	**0.59**			
101	Coyote Creek	79,829	1.83	Lotic	yes	Herbaceous wetland and riparian vegetation with scattered willows along perennial stream.
101	Tributary to Foidel Creek	62,325	1.43	Lotic	yes	Herbaceous wetlands with aspen overstory along ephemeral stream.
101	Foidel Creek	13,229	0.30	Lotic	FAR	Herbaceous wetlands along perennial stream and around perennial stock pond. Please note there is a spring above the pond which is the primary source of water for the stream. Some wetlands occur in coniferous forest.

TABLE 6.9-1
Riparian-Wetland Habitats
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Riparian-Wetland Name	Riparian-Wetland Area (sq. feet)	Riparian-Wetland Area (acres)	Riparian-Wetland Type[+]	PFC[++]	Description
	Total Parcel 101	**155,383**	**3.56**			
104A	Trout Creek	104,053	2.39	Lotic	yes	Narrowleaf cottonwood forest and alder/willow shrub wetland/riparian habitat along perennial stream.
107	Seeps and beaver pond wetlands in south	155,909	3.58	Lentic	yes	Beaver dam wetland complex with scattered subalpine fir and aspen. Numerous alders are present.
107	Seeps and beaver pond wetlands in southeast	140,338	3.22	Lentic	yes	Beaver dam wetland complex with scattered subalpine fir and aspen. Numerous alders are present.
107	Wetlands along west ephemeral drainage	99,462	2.28	Lotic	yes	Alders and aspen with herbaceous wetland/riparian understory along ephemeral stream.
107	Beaver pond wetlands in north-central	97,788	2.24	Lentic/Lotic	yes	Herbaceous wetlands associated with beaver dam complexes and along ephemeral streams.
107	Wetlands along east ephemeral drainage	56,896	1.31	Lotic	yes	Herbaceous wetlands associated with beaver dam complexes and along ephemeral stream.
107	Wetlands in far north	41,310	0.95	Lentic/Lotic	yes	Herbaceous wetlands associated with beaver dam complexes and along intermittent stream.
	Total Parcel 107	**591,703**	**13.58**			

TABLE 6.9-1
Riparian-Wetland Habitats
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Riparian-Wetland Name	Riparian-Wetland Area (sq. feet)	Riparian-Wetland Area (acres)	Riparian-Wetland Type[+]	PFC[++]	Description
108	Perennial beaver ponds at head of drainage	129,754	2.98	Lentic/Lotic	yes	Herbaceous wetlands associated with old beaver ponds and scattered along an ephemeral stream.
109	Middle Drainage swale	58,064	1.33	Lotic	yes	Aspen forest with scattered alders, willows and herbaceous wetland and riparian plants along perennial stream.
109	Unnamed northwest drainage swale	27,075	0.62	Lotic	yes	Aspen and subalpine fir riparian/wetland complex with a beaver dam complex in forest opening.
109	Unnamed southeast drainage swale	10,800	0.25	Lotic/Lentic	yes	Wetland vegetation along a steep rocky channel including a spring above the channel and an aspen forest wetland with scattered alders, willows, and herbaceous wetland/ riparian species.
	Total Parcel 109	**95,939**	**2.20**			
112	East Fork Williams Fork River	143,830	3.30	Lotic	yes	Narrowleaf cottonwood riparian forest along perennial stream.
116	Unnamed drainage to Oak Creek	2,656	0.06	Lotic/Lentic	yes	Herbaceous wetland around beaver pond and small stream in opening of aspen/coniferous forest.
116	Little White Snake Creek	603	0.01	Lotic	yes	Herbaceous wetland around beaver pond and small stream in opening of aspen/coniferous forest.

TABLE 6.9-1
Riparian-Wetland Habitats
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Riparian-Wetland Name	Riparian-Wetland Area (sq. feet)	Riparian-Wetland Area (acres)	Riparian-Wetland Type[+]	PFC[++]	Description
	Total Parcel 116	**3,259**	**0.07**			
117	Unnamed drainage to Oak Creek	3,430	0.08	Lotic	yes	Willow shrub riparian habitat and narrow band of herbaceous wetland vegetation along ephemeral stream.
118	Oak Creek	210,374	4.83	Lotic	FAR	Willow and alder shrub riparian habitat and narrow band of herbaceous wetland vegetation along perennial stream.
121	North Hunt Creek/irrigation ditch	30,428	0.70	Lotic	yes	Herbaceous wetlands in an irrigation ditch/ ephemeral drainage.
123	Unnamed drainage swale tributary to Bull Creek	27,079	0.62	Lotic	yes	Broad herbaceous wetland swale in northwest corner of parcel.
124	Unnamed drainage to Bull Creek	102,274	2.35	Lotic	yes	Broad wetland swale dominated by willows and wetland/riparian herbaceous species.
126	Irrigation Ditch tributary to South Hunt Creek	3,528	0.08	Lotic	yes	Herbaceous wetland/riparian species along irrigation ditch.
126	Riparian habitat associated with S. Hunt Creek	2,779	0.06	Lotic	yes	Willow shrubland riparian habitat associated with perennial stream which is not on the parcel.
	Total Parcel 126	**6,307**	**0.14**			
128	Unnamed drainages to Watson Creek	4,072	0.09	Lotic	yes	Herbaceous wetland vegetation along two drainage swales.
129	Watson Creek wetlands	5,514	0.13	Lotic	yes	Herbaceous wetland vegetation associated with Watson Creek which is

TABLE 6.9-1
Riparian-Wetland Habitats
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Riparian-Wetland Name	Riparian-Wetland Area (sq. feet)	Riparian-Wetland Area (acres)	Riparian-Wetland Type[+]	PFC[++]	Description
						not the parcel.
130	Ephemeral drainage swale to Phillips Creek	86,861	1.99	Lotic	yes	Willow shrub wetland/riparian habitat along ephemeral drainage swale.
130	Phillips Creek	61,802	1.42	Lotic	yes	Willow shrub wetland/riparian habitat along perennial stream.
	Total Parcel 130	**148,663**	**3.41**			
	GRAND TOTAL	**9,056,277**	**207.90**			

[+]Riparian-Wetland Type where 1) Lentic refers to areas standing water habitat such as lakes, ponds, seeps, bogs, and meadows, and 2) Lotic which is running water habitat such as rivers, streams, and springs.
[++]PFC = proper functioning condition. When stated yes, the wetland/riparian area is in proper functioning condition. When stated functioning at risk (FAR), the wetland is functional, but susceptible to degradation due to soil erosion, lack of vegetation, or inadequate hydrology (Prichard et al., 1998a & 1998b).
*Riparian-Wetland Parcels where the wetland habitats appear to be isolated and may be considered non-jurisdictional by the U.S. Army Corps of Engineers.
Please note, this table includes non-jurisdictional wetlands that were excluded from Table 6.9-2. In addition, riparian vegetation is often wider than wetland vegetation along streams, hence riparian acreages are generally greater than wetland acreages such as in Table 6.9-2. Areas not included in riparian habitats include ephemeral stream channels without riparian or wetland plants and stock ponds without wetland or riparian vegetation.

TABLE 6.9-2
Summary of Wetlands & Aquatic Habitats
Emerald Mountain Land Exchange

Parcel Name/#	Wetlands (Acres)	Aquatic Habitats (Acres)	Total Waters of the U.S. (Acres)
	Selected Federal Parcels		
2	3.49	10.66	14.15
3	1.13	1.76	2.89
6	2.82	0.26	3.08
11	0.51	0.16	0.67
12	0.06	0.01	0.07
13	0.09	0.07	0.16
14	1.38	0.29	1.67
16	0.46	0.36	0.81
17	0.40	0.00	0.40
20	0.32	0.99	1.31
21	0.46	0.04	0.50
22A	2.39	0.07	2.46
24	0.84	4.55	5.40
26	1.83	0.11	1.95
27	0.08	1.02	1.11
28	0.11	1.59	1.70
37	0.36	0.02	0.38
40	0.08	0.55	0.63
40A	0.14	0.04	0.18
42	3.56	2.03	5.59
46	0.19	0.04	0.23
47	0.95	0.08	1.03
48	0.30	0.05	0.35
50	0.70	0.43	1.13
52	0.84	0.02	0.85
54	0.06	0.92	0.98
58	4.60	1.89	6.49
59	0.26	0.60	0.86
62	0.00	0.07	0.07
66	2.27	0.23	2.50
68	0.08	0.25	0.34
69	0.97	0.00	0.97
71	0.12	0.04	0.16
76	0.46	0.00	0.46
80	0.28	0.33	0.61
85	0.74	0.03	0.77
91	0.00	0.12	0.12
93	0.02	0.05	0.06
94	0.59	0.11	0.71
95	0.00	0.00	0.01
98	1.57	0.54	2.11
99	0.57	0.02	0.59
101	1.09	0.16	1.25
104A	0.33	0.37	0.69
107	12.52	1.06	13.58
108	1.28	1.69	2.98

TABLE 6.9-2
Summary of Wetlands & Aquatic Habitats
Emerald Mountain Land Exchange

Parcel Name/#	Wetlands (Acres)	Aquatic Habitats (Acres)	Total Waters of the U.S. (Acres)
Selected Federal Parcels			
109	1.23	0.97	2.20
110	0.00	0.15	0.15
112	0.22	0.60	0.83
116	0.02	0.05	0.07
117	0.01	0.00	0.02
118	0.21	0.54	0.75
121	0.70	0.00	0.70
123	0.62	0.00	0.62
124	1.76	0.00	1.76
128	0.09	0.00	0.09
129	0.13	0.00	0.13
130	1.28	0.11	1.39
TOTAL	**57.77**	**36.36**	**94.12**
Offered Non-Federal Parcel			
Emerald Mountain	26.22	8.99	35.21
TOTAL	**26.22**	**8.99**	**35.21**

Please note, potentially isolated wetlands and aquatic habitats and other non-jurisdictional features were excluded from this table. Acreage is rounded to two decimal places. Sum totals are generated from actual values.

TABLE 6.9-3
Riparian-Wetland Areas
Offered Non-Federal Parcel
Emerald Mountain Land Exchange

Name	Riparian Area (sq. feet)	Riparian Area (acres)	Riparian-Wetland Type±	PFC++	Description
Cow Creek	2,981,337	68.44	Lotic	FAR	Narrowleaf cottonwood forest and willow/alder shrublands along intermittent stream
1	410,960	9.43	Lotic	FAR	Narrowleaf cottonwood forest along intermittent/ephemeral stream.
2	287,264	6.59	Lotic	FAR	Herbaceous wetland seeps along ephemeral drainage swale.
3	181,399	4.16	Lentic	FAR	Herbaceous wetlands and aquatic habitat at spring/seep.
4	163,677	3.76	Lotic	FAR	Herbaceous wetland vegetation with isolated wetlands along ephemeral stream.
5	71,077	1.63	Lentic	FAR	Grazed herbaceous wetland.
6	66,975	1.54	Lotic	yes	Herbaceous wetland plants and scattered alders along ephemeral stream in subalpine fir/aspen forest.
7	66,430	1.53	Lotic	yes	Herbaceous wetland vegetation along ephemeral stream.
8	62,349	1.43	Lentic	FAR	Stock pond with stand of cattails, no vegetation along edges.
9	54,580	1.25	Lotic	yes	Wetland/riparian vegetation along ephemeral stream through aspen forest.
10	39,540	0.91	Lotic	yes	Scattered wetland vegetation along ephemeral stream in dense subalpine fir and blue spruce forest.
11	36,228	0.83	Lotic	FAR	Band of herbaceous wetland vegetation along intermittent stream and two seeps through snowberry shrub/bracken fern/ community. Scattered subalpine fir also present.
12	32,228	0.74	Lotic	FAR	Herbaceous wetland vegetation at seep and in drainage swale.
13	31,944	0.73	Lotic	FAR	Grazed herbaceous wetland.
14	26,160	0.60	Lotic	FAR	Heavily grazed herbaceous wetland along ephemeral stream.

TABLE 6.9-3
Riparian-Wetland Areas
Offered Non-Federal Parcel
Emerald Mountain Land Exchange

Name	Riparian Area (sq. feet)	Riparian Area (acres)	Riparian-Wetland Type±	PFC++	Description
15	24,321	0.56	Lotic	yes	Narrow band of herbaceous wetland vegetation along ephemeral stream in dense subalpine fir and aspen forest.
16	23,832	0.55	Lotic	FAR	Herbaceous wetland vegetation along ephemeral stream in silver sagebrush/snowberry shrubland and aspen forest.
17	23,800	0.55	Lotic	yes	Herbaceous wetland-riparian plants along ephemeral stream in subalpine fir and aspen forest.
18	22,260	0.51		FAR	Scattered herbaceous wetland vegetation along ephemeral stream in subalpine fir and aspen forest.
19	20,220	0.46	Lotic	yes	Herbaceous wetland vegetation with scattered alders along ephemeral stream in aspen and blue spruce forest.
20	14,886	0.34	Lotic	FAR	Herbaceous wetland seep in transmission line crossing and aspen forest.
21	14,840	0.34	Lotic	yes	Wetland/riparian vegetation along ephemeral stream in open aspen forest.
22	12,781	0.29	Lotic	FAR	Herbaceous wetland vegetation and isolated grazed willows along ephemeral drainage swale. Cottonwoods present near junction with Cow Creek.
23	9,370	0.22	Lotic	yes	Herbaceous wetland vegetation and scattered willows along ephemeral drainage swale adjacent and through aspen forest.
24	9,370	0.22	Lotic	FAR	Herbaceous wetland/riparian plants and scattered willows along ephemeral stream.
25	6,736	0.15	Lotic	FAR	Herbaceous wetlands along ephemeral drainage swales.
26	5,927	0.14	Lentic	FAR	Herbaceous wetlands in drainage swale.
27	5,090	0.12	Lotic	FAR	Herbaceous wetlands species along ephemeral stream in silver sagebrush shrubland.

TABLE 6.9-3
Riparian-Wetland Areas
Offered Non-Federal Parcel
Emerald Mountain Land Exchange

Name	Riparian Area (sq. feet)	Riparian Area (acres)	Riparian-Wetland Type[+]	PFC[++]	Description
28	4,265	0.10	Lotic	yes	Herbaceous wetland vegetation along ephemeral stream.
29	2,337	0.05	Lotic	FAR	Herbaceous wetland vegetation in drainage swale.
30	2,266	0.05	Lotic	FAR	Herbaceous wetlands at several seeps and in drainage swale adjacent to aspen forest.
31	1,911	0.04	Lotic	yes	Herbaceous wetland vegetation in drainage swale.
32	1,815	0.04	Lotic	FAR	Herbaceous wetland vegetation in drainage swale.
33	1,500	0.03	Lentic	FAR	Herbaceous wetland seep.
34	1,495	0.03	Lotic	FAR	Herbaceous wetland vegetation with isolated willows along drainage swale.
35	1,202	0.03	Lotic	FAR	Herbaceous wetland vegetation along ephemeral drainage swale with spring.
36	959	0.02	Lentic	FAR	Grazed cow wallow, minor amounts of herbaceous wetland vegetation.
37	200	0.00	Lentic	FAR	Herbaceous wetland seep.
GRAND TOTAL	**4,723,530**	**108.44**			

[+]Riparian-Wetland Type where 1) Lentic refers to areas standing water habitat such as lakes, ponds, seeps, bogs, and meadows, and 2) Lotic which is running water habitat such as rivers, streams, and springs.
[++]PFC = proper functioning condition. When stated yes, the wetland/riparian area is in proper functioning condition. When stated functional at risk (FAR), the wetland is functional, but susceptible to degradation due to soil erosion, lack of vegetation, or inadequate hydrology (Prichard et al., 1998a & 1998b).
Please note, unnamed ephemeral streams were assigned numerals in order of size.
Square footage is rounded to whole numbers and acreage is rounded to two decimal places. Sum totals are generated from actual values.

TABLE 7.1-1
Selected Federal Parcels With Public Access
Emerald Mountain Land Exchange

Parcel Number	Size (Acres)	Access
	Selected Federal Parcels	
14	24.09	CR129
16	875.02	CR76
24	388.30	CR76
59	40.03	CR52
68	8.69	CR46
85	40.00	CR37
90	26.06	CR41
99	40.00	CR37A
104A	40.00	CR29
110	40.00	CR55
112	40.00	CR55
117	10.48	CR25
118	20.98	CR25
119	83.33	CR132
128	101.10	CR13A
Total	**1,778.08**	
	Offered Non-Federal Parcel	
Emerald Mountain	4404	CR45

TABLE 7.2-1
Mineral Potential Summary
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Mineral Potential – Specific Commodity: Leasable Minerals Commodity	Leasable Minerals Potential	Locatable Minerals Commodity	Locatable Minerals Potential	Mineral Materials Commodity	Mineral Materials Potential	Overall Ranking (Potential/ Certainty)
1	Coal	Moderate					M / B
2	Coal	Moderate	Gold	Moderate	Aggregate	Moderate	M / B
3	Coal	Moderate					M / B
4	Coal	Moderate					M / B
5	Coal	Moderate					M / B
6	Coal	Moderate					M / B
8	Coal	Moderate					M / B
9	Coal	Moderate					M / B
11							L / B
12							L / B
13							L / B
14			Gold	Moderate	Aggregate	Moderate	M / C
15							L / B
16							L / B *
17							L / B *
18							L / B *
19							L / B *
20							L / B *
21							L / B
21A							L / B
22							L / B
22A							L / B
23							L / B
24					Aggregate	Moderate	M / C
25							L / B *
26							L / B *
27							L / B *
28							L / B *
29							L / B
30							L / B
31							L / B *
32							L / B *
33							L / B *
37	Coal	Moderate					M / B

TABLE 7.2-1
Mineral Potential Summary
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Mineral Potential – Specific Commodity: Leasable Minerals Commodity	Leasable Minerals Potential	Locatable Minerals Commodity	Locatable Minerals Potential	Mineral Materials Commodity	Mineral Materials Potential	Overall Ranking (Potential/ Certainty)
38	Coal	Moderate					M / B
39	Coal	Moderate					M / B
40	Coal	Moderate					M / B
	Oil & Gas	Moderate					
40A							L / B
41							L / B
42	Coal	Moderate					M / B
43							L / B
44							L / B
45							L / B
46							L / B
47							L / B
48							L / B
49							L / B
50							L / B
51			Gold	Moderate	Aggregate	Moderate	M / B
52							L / B *
54							L / B *
55							L / B *
56	Coal	Moderate					M / B
57	Coal	Moderate					M / B
58	Coal	Moderate					M / B
59	Geothermal	Moderate					M / A
60	Geothermal	Moderate					M / A
61					Meta-Shale	Moderate	M / A
62	Oil & Gas	High					H / B
	Coal	Moderate					
	Geothermal	Moderate					
63							L / B
64	Coal	Moderate					M / B
65							L / B
66							L / B *
67	Geothermal	Moderate					M / A
68							L / B

TABLE 7.2-1
Mineral Potential Summary
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Mineral Potential – Specific Commodity: Leasable Minerals Commodity	Leasable Minerals Potential	Locatable Minerals Commodity	Locatable Minerals Potential	Mineral Materials Commodity	Mineral Materials Potential	Overall Ranking (Potential/ Certainty)
69	Coal	Moderate					M / B
70	Geothermal	Moderate					M / A
71							L / B
73	Coal	Moderate					M / B
76	Coal	Moderate					M / B
77	Coal	Moderate					M / B
78							L / B
80	Coal	High					H / C
81	Coal	High					H / D
82	Oil & Gas	Moderate					M / C
82A	Coal	Moderate					
83A	Coal	Moderate					
84	Coal	High					H / D
85	Coal	Moderate					M / B
87							L / B *
88	Coal	Moderate					M / B
	Oil & Gas	Moderate					
90							L / B
91							L / B *
93	Coal	Moderate					
94	Coal	Moderate					M / B
95							L / B
96							L / B
97							L / B
98							L / B
99							L / B
101	Coal	High					H / D
102	Coal	Moderate					M / B
104	Coal	Moderate					M / B
104A							L / B *
104B							L / B *
104C							L / B *
104D	Coal	Moderate					M / B
105							L / B

TABLE 7.2-1
Mineral Potential Summary
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Mineral Potential – Specific Commodity: Leasable Minerals Commodity	Leasable Minerals Potential	Locatable Minerals Commodity	Locatable Minerals Potential	Mineral Materials Commodity	Mineral Materials Potential	Overall Ranking (Potential/ Certainty)
105A							
105B							
105C							L / B *
106					Aggregate	Moderate	M / B
107							L / B
108							L / B
109							L / B
110							L / B
111							L / B
112							L / B
113							L / B
114							L / B
114B	Coal	Moderate					
114C	Coal	Moderate					
115							L / B *
115A							L / B *
116	Coal	Moderate					M / B
117							L / B
118							L / B
118A							L / B
119							L / B
120							L / B
121							L / B
122							L / B
123							L / B
124							L / B
125					Aggregate	Moderate	M / B
126					Aggregate	Moderate	M / B
128							L / B
129					Aggregate	Moderate	M / B
130					Aggregate	Moderate	M / B
131							L / B

Overall Ranking Key:
Potential Certainty

TABLE 7.2-1
Mineral Potential Summary
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel Number	Mineral Potential – Specific Commodity: Leasable Minerals Commodity	Leasable Minerals Potential	Locatable Minerals Commodity	Locatable Minerals Potential	Mineral Materials Commodity	Mineral Materials Potential	Overall Ranking (Potential/ Certainty)
L = Low		A = Insufficient data					
M = Moderate		B = Indirect evidence					
H = High		C = Direct evidence					
				D = Abundant direct and indirect evidence			

* = Parcel with low mineral potential and encumbered by oil & gas lease

TABLE 7.2-2
Mineral Related Encumbrances & Exchange Consequences
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Exchange Proponent	Coal Lease	Oil & Gas Lease	Exchange Consequence: Mineral Estate Conveyed or Retained
1	Sparks		COC 59206 – Energy Invst. Inc / Stone & Wolf COC 61738 – Stone & Wolf, LLC	Retain coal only
2	Marsh		COC 60937 – Energy Invst. Inc / Stone & Wolf COC 61063 – Stone & Wolf / Wilson Carroll	Retain coal only
3	Marsh		COC 59661 – Stone & Wolf, LLC	Retain all minerals
4	Stull Ranches		COC 61739 – Stone & Wolf, Foster Exp., Mak J Energy Partners., Vintage Petroleum, Voyager Exp., Peninsular O&G, Monty Kastner	Retain coal only
5	Stull Ranches		COC 59206 – Clayton Williams Energy, Inc.	Retain all minerals
6	Stull Ranches		COC 59206 – Stone & Wolf, LLC	Retain all minerals
8	Sheep Mtn Partnership		COC 60625 – Energy Invst. Inc / Stone & Wolf	Retain coal only
9	Sheep Mtn Partnership		COC 59986 – Energy Invst. Inc / Stone & Wolf	Retain coal only
11	Fetcher			Retain coal only
12	Hill			Convey all minerals
13	Woods			Convey all minerals
14	State Land Board			Convey all minerals
15	Ross			Convey all minerals
16	Rancho Greco/Nottingham		COC 63297 – KLT Gas, Inc.	Retain coal only

TABLE 7.2-2
Mineral Related Encumbrances & Exchange Consequences
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Exchange Proponent	Coal Lease	Oil & Gas Lease	Exchange Consequence: Mineral Estate Conveyed or Retained
			COC 64223 – Tipperary O & G Corp	
17	Nottingham		COC 64223 – Tipperary O & G Corp	Convey all minerals
18	Nottingham		COC 64223 – Tipperary O & G Corp	Convey all minerals
19	Nottingham		COC 64223 – Tipperary O & G Corp	Convey all minerals
20	Nottingham		COC 64222 – Conoco Philips Co.	Retain coal only
21	Allen			Retain coal only
21A	Routt Investments			Convey all minerals
22	Dean & Laura Chew			Retain coal only
22A	Routt Investments			Convey all minerals
23	Dean & Laura Chew			Retain coal only
24	Nottingham/Murphy		COC 63297 – KLT Gas Inc. COC 63298 – Infinity O & G of Wyoming	Retain coal only
25	J. Spitzley		COC 63295 – KLT Gas Inc.	Retain all minerals
26	Nottingham/Murphy		COC 63297 – KLT Gas Inc.	Retain coal only
27	Nottingham		COC 63297 – KLT Gas Inc.	Convey all minerals
28	Nottingham/Murphy		COC 63297 – KLT Gas Inc.	Convey all minerals
29	Murphy			Retain coal only

TABLE 7.2-2
Mineral Related Encumbrances & Exchange Consequences
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Exchange Proponent	Coal Lease	Oil & Gas Lease	Exchange Consequence: Mineral Estate Conveyed or Retained
31	Cook		COC 63300 – Infinity O & G of Wyoming	Retain coal only
32	Nottingham		COC 63300 – Infinity O & G of Wyoming	Retain coal only
33	Nottingham		COC 63303 – Infinity O & G of Wyoming	Convey all minerals
37	Mystic Hill Ranch			Convey all minerals
38	Mystic Hill			Retain all minerals
39	Smith Rancho			Retain all minerals
40	Smith Rancho		COC 63288 – KLT Gas Inc. COC 63292 – Infinity O & G of Wyoming	Retain all minerals
40A	Ellsworth			Convey all minerals
41	Chew/Harvey			Convey all minerals
42	Poole/Nottingham/Meadows Realty			Convey all minerals
43	Guthrie			Convey all minerals
44	Poole			Convey all minerals
45	Meadows Realty			Convey all minerals
46	Meadows Realty			Convey all minerals
47	Chew			Convey all minerals

TABLE 7.2-2
Mineral Related Encumbrances & Exchange Consequences
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Exchange Proponent	Coal Lease	Oil & Gas Lease	Exchange Consequence: Mineral Estate Conveyed or Retained
48	Chew			Convey all minerals
49	Komfala			Convey all minerals
50	State Land Board			Convey all minerals
51	State Land Board			Convey all minerals
52	State Land Board		COC 64219 – Conoco Philips Co.	Convey all minerals
54	Nottingham		COC 64221 – Conoco Philips Co.	Retain coal only
55	Nottingham		COC 64221 – Conoco Philips Co.	Convey all minerals
56	Nottingham		COC 64221 – Conoco Philips Co.	Retain coal only
57	Nottingham		COC 64221 – Conoco Philips Co.	Retain coal only
58	Smith Rancho/Waltrip		COC 63288 – KLT Gas Inc. COC 63289 – American General Partnership	Retain all minerals
59	Waltrip		COC 39889 – Norman Foster, MS Johnson, Richard Vincelette, Pacific Enterprs. Oil, Chandler Energy, AG Andrikopoulos Res.	Convey all minerals
60	Waltrip		COC 39889 – Norman Foster, MS Johnson, Richard Vincelette, Pacific Enterprs. Oil, Chandler Energy, AG Andrikopoulos Res.	Retain coal only
61	Smith Rancho		COC 63290 – KLT Gas Inc.	Retain coal only
62	Waltrip		COC 39889 – Norman Foster, MS Johnson,	Retain all minerals

TABLE 7.2-2
Mineral Related Encumbrances & Exchange Consequences
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Exchange Proponent	Coal Lease	Oil & Gas Lease	Exchange Consequence: Mineral Estate Conveyed or Retained
			Richard Vincelette, Pacific Enterprs. Oil, Chandler Energy, AG Andrikopoulos Res.	
63	Waltrip		COC 39889 – Norman Foster, MS Johnson, Richard Vincelette, Pacific Enterprs. Oil, Chandler Energy, AG Andrikopoulos Res.	Convey all minerals
64	Waltrip			Convey all minerals
65	Smith Rancho			Convey all minerals
66	Smith Rancho		COC 39889 – Norman Foster, MS Johnson, Richard Vincelette, Pacific Enterprs. Oil, Chandler Energy, AG Andrikopoulos Res.	Convey all minerals
67	Waltrip			Retain coal only
68	Sherrod			Convey all minerals
69	Waltrip			Retain all minerals
70	Waltrip			Convey all minerals
71	Utterback			Retain all minerals
73	Frentress		COC 57089 – Antelope Energy Co. LLC	Retain coal only
76	State Land Board			Convey all minerals
77	Iacovetto		COC 56893 – Millennium O & G LLC	Retain coal only
78	Solo			Convey all minerals

TABLE 7.2-2
Mineral Related Encumbrances & Exchange Consequences
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Exchange Proponent	Coal Lease	Oil & Gas Lease	Exchange Consequence: Mineral Estate Conveyed or Retained
80	Ricks		COC 65978 – Cabot O & G Corp. COC 7796 – Booco's Contract Svc.	Retain coal only
81	Ricks	COC 081258 – Seneca Coal Co.		Retain coal only
82	Cross Mountain			Convey all minerals
82A	Maneotis, J.		COC 65978 - Cabot O & G Corp.	Convey all minerals
83A	Cross Mountain		COC 59177 - Linbeck Partners, Merrill Whitehead III, Rocky Mt. Resources, McCauley & Assoc.	Retain coal only
84	Patrick	COC0114093 – Seneca Coal Co.	COC 122676 – Booco's Contract Svc.	Retain coal only
85	Ricks		COC 59178 – Linbeck Partners, Merrill Whitehead III, Rocky Mt. Resources, McCauley & Assoc.	Retain coal only
88	Montieth		COC 57715 – Palo Prod. Corp.	Retain all minerals
90	Roundtree			Convey all minerals
91	Wyman, L		COC 65994 – Cabot O & G Corps	Convey all minerals
93	Cross Mountain			Retain coal only
94	Cross Mountain			Retain coal only

TABLE 7.2-2
Mineral Related Encumbrances & Exchange Consequences
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Exchange Proponent	Coal Lease	Oil & Gas Lease	Exchange Consequence: Mineral Estate Conveyed or Retained
95	Cross Mountain			Convey all minerals
96	Cross Mountain			Convey all minerals
97	Cross Mountain			Convey all minerals
98	Cross Mountain			Convey all minerals
99	Cross Mountain			Convey all minerals
101	Cross Mountain/Hunter		COC 7796 – Booco's Contract Svc. COC 59175 – Linbeck Partners, Merrill Whitehead III, Rocky Mt. Resources, McCauley & Assoc.	Retain all minerals
102	Hunter			Retain coal only
104	Hunter		COC 64217 – Lynn Properties	Retain coal only
104A	Brusca		COC 64216 – Lynn Properties	Retain coal only
104B			COC 64216 – Lynn Properties	Retain coal only
104C			COC 64216 – Lynn Properties	Retain coal only
104D				Retain coal only
105	Jones			Convey all minerals
105A	Maneotis, A.			Convey all minerals
105B	Maneotis, A.			Convey all minerals

TABLE 7.2-2
Mineral Related Encumbrances & Exchange Consequences
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Exchange Proponent	Coal Lease	Oil & Gas Lease	Exchange Consequence: Mineral Estate Conveyed or Retained
105C	Maneotis, A.			Convey all minerals
106	Cosby			Convey all minerals
107	Cross Mountain			Retain coal only
108	Cosby			Retain coal only
109	Cosby			Retain coal only
110	Omlid			Convey all minerals
111	Omlid			Convey all minerals
112	Signs			Convey all minerals
113	Cosby			Retain coal only
114	Hunter			Retain coal only
114B	Maneotis, J.			Retain coal only
114C	Maneotis, J.		COC 61729 – Medallion Expl.	Retain coal only
115	Wertenteil		COC 61729 - Medallion Expl.	Convey all minerals
115A	Maneotis, J.		COC 61729 – Medallion Expl.	Retain coal only
116	Pinnacle Peak		COC 61729 – Medallion Expl.	Retain coal only
117	Pinnacle Peak			Retain coal only

TABLE 7.2-2
Mineral Related Encumbrances & Exchange Consequences
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Exchange Proponent	Coal Lease	Oil & Gas Lease	Exchange Consequence: Mineral Estate Conveyed or Retained
118	Pinnacle Peak			Retain coal only
118A	Viele			Retain coal only
119	Pinnacle Peak			Retain coal only
120	Crawford			Convey all minerals
121	Craig			Convey all minerals
123	Broken Bone Ranch			Retain coal only
124	Broken Bone Ranch			Retain coal only
125	Broken Bone Ranch			Retain coal only
126	Broken Bone Ranch			Retain coal only
128	Broken Bone Ranch			Convey all minerals
129	R & T Land & Cattle			Convey all minerals
130	Brooks			Convey all minerals
131	Horowitz			Convey all minerals

TABLE 7.3-1
Range Management Summary
Grazing Allotments by Parcel Number
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Grazing Allotment	# AUMs in Allotment	Exchange Consequence	Proponent
1	4015	22	Cancellation of Allotment	Sparks
2*	4015	22	Cancellation of Allotment	Marsh
2	4016	53	Cancellation of Allotment	Marsh
3	4019	3	Reduction of 3 AUM	Stull Ranches
4	4019	3	Reduction of 3 AUM	Stull Ranches
4	4018	4	Reduction of 4 AUM	Stull Ranches
5	4016	53	Cancellation of Allotment	Marsh
6	4014	34	Reduction of 34 AUM	Sheep Mtn. Partnership
8	4011	4	Cancellation of Allotment	Sheep Mtn. Partnership
9	4011	2	Cancellation of Allotment	Sheep Mtn. Partnership
11	4196	17	Cancellation of Allotment	Fetcher
12	4117	8	Cancellation of Allotment	Hill
13*	4119	7	Reduction of 7 AUM	Woods
14*	4118	7	Cancellation of Allotment	SLB
15	4643	2	Cancellation of Allotment	Ross
16	4091	102	Reduction of 102 AUM	Rancho Greco/ Nottingham

TABLE 7.3-1
Range Management Summary
Grazing Allotments by Parcel Number
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Grazing Allotment	# AUMs in Allotment	Exchange Consequence	Proponent
16	4093	298	Cancellation of Allotment	Rancho Greco/ Nottingham
17	4093	298	Cancellation of Allotment	Nottingham
18	4093	298	Cancellation of Allotment	Nottingham
19	4093	298	Cancellation of Allotment	Nottingham
20	4093	298	Cancellation of Allotment	Nottingham
21	4657	3	Cancellation of Allotment	Wheatley/ King/Allen
21A*	4114	3	Cancellation of Allotment	Routt Investments
22	4115	250	Cancellation of Allotment	Chew
22A*	4114	3	Cancellation of Allotment	Routt Investments
22A*	4115	250	Cancellation of Allotment	Routt Investments
23*	4114	3	Cancellation of Allotment	Chew
23	4115	250	Cancellation of Allotment	Chew
24	4093	298	Cancellation of Allotment	Murphy/ Nottingham
24	4094	63	Cancellation of Allotment	Murphy/ Nottingham
25*	4094	63	Cancellation of Allotment	Spitzley
25	4095	13	Reduction of 13 AUM	Spitzley
26	4093	298	Cancellation	Murphy/

TABLE 7.3-1
Range Management Summary
Grazing Allotments by Parcel Number
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Grazing Allotment	# AUMs in Allotment	Exchange Consequence	Proponent
			of Allotment	Nottingham
26	4094	63	Cancellation of Allotment	Murphy/ Nottingham
27	4093	298	Cancellation of Allotment	Nottingham
28	4093	298	Cancellation of Allotment	Murphy/ Nottingham
28	4094	63	Cancellation of Allotment	Murphy/ Nottingham
29	4094	63	Cancellation of Allotment	Murphy
31*	4093	298	Cancellation of Allotment	Cook
32	4093	298	Cancellation of Allotment	Nottingham
33	4093	298	Cancellation of Allotment	Nottingham
33*	4651	29	Cancellation of Allotment	Nottingham
37*	4098	418	Cancellation of Allotment	Mystic Hill Ranch
37*	4110	125	Cancellation of Allotment	Mystic Hill Ranch
38	4098	418	Cancellation of Allotment	Smith Rancho/ Mystic Hill Ranch
38*	4110	125	Cancellation of Allotment	Smith Rancho/ Mystic Hill Ranch
39	4098	418	Cancellation of Allotment	Smith Rancho
40	4098	418	Cancellation of Allotment	Smith Rancho
40A	None	N/A	N/A	Ellsworth

TABLE 7.3-1
Range Management Summary
Grazing Allotments by Parcel Number
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Grazing Allotment	# AUMs in Allotment	Exchange Consequence	Proponent
41*	4115	250	Cancellation of Allotment	Harvey
42	4110	125	Cancellation of Allotment	Poole/Nottingham/ Meadows Realty
42	4112	71	Cancellation of Allotment	Poole/Nottingham/ Meadows Realty
42	4649	36	Cancellation of Allotment	Poole/Nottingham/ Meadows Realty
43	4655	2	Cancellation of Allotment	Guthrie
44	4649	36	Cancellation of Allotment	Poole
45	4110	125	Cancellation of Allotment	Meadows Realty
46	4110	125	Cancellation of Allotment	Meadows Realty
47	4115	250	Cancellation of Allotment	Chew
48	4115	250	Cancellation of Allotment	Chew
49*	4115	250	Cancellation of Allotment	Komfala
50	4121	41	Cancellation of Allotment	Souders/Riskind/ Taylor
51	None	N/A	N/A	SLB
52*	4096	8	Reduction of 8 AUM	SLB
54	4093	298	Cancellation of Allotment	Nottingham
55	4093	298	Cancellation of Allotment	Nottingham

TABLE 7.3-1
Range Management Summary
Grazing Allotments by Parcel Number
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Grazing Allotment	# AUMs in Allotment	Exchange Consequence	Proponent
56	4093	298	Cancellation of Allotment	Nottingham
57	4093	298	Cancellation of Allotment	Nottingham
58	4098	418	Cancellation of Allotment	Smith Rancho/ Waltrip
58	4102	113	Cancellation of Allotment	Smith Rancho/ Waltrip
58	4102	113	Cancellation of Allotment	Smith Rancho/ Waltrip
59	4102	113	Cancellation of Allotment	Waltrip
60	4102	113	Cancellation of Allotment	Waltrip
61	4098	418	Cancellation of Allotment	Smith Rancho
62*	4101	20	Cancellation of Allotment	Waltrip
63*	4101	20	Cancellation of Allotment	Waltrip
63	4102	113	Cancellation of Allotment	Waltrip
64	4099	9	Cancellation of Allotment	Waltrip
65	4098	418	Cancellation of Allotment	Smith Rancho
66	4098	418	Cancellation of Allotment	Smith Rancho
67	4652	244	Cancellation of Allotment	Waltrip
68	None	N/A	N/A	Sherrod

TABLE 7.3-1
Range Management Summary
Grazing Allotments by Parcel Number
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Grazing Allotment	# AUMs in Allotment	Exchange Consequence	Proponent
69*	4105	16	Cancellation of Allotment	Waltrip
69	4652	244	Cancellation of Allotment	Waltrip
70	4102	113	Cancellation of Allotment	Waltrip
71	4104	36	Cancellation of Allotment	Utterback
73	None	N/A	N/A	Frentress
76*	4640	8	Cancellation of Allotment	SLB
77	4641	24	Cancellation of Allotment	Iacovetto
78	None	N/A	N/A	Solo
80*	4161	23	Reduction of 23 AUM	Ricks
81	4162	8	Cancellation of Allotment	Ricks
82	4163	353	Reduction of 353 AUM	Cross Mountain
82A	4160	11	Cancellation of Allotment	J. Maneotis
83A	4163	353	Cancellation of Allotment	Cross Mountain
84*	4161	23	Participant will lease back to grazing lessee, Reduction of 23 AUM	Patrick
85*	4161	23	Reduction of 23 AUM	Ricks
85	4162	8	Cancellation	Ricks

TABLE 7.3-1
Range Management Summary
Grazing Allotments by Parcel Number
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Grazing Allotment	# AUMs in Allotment	Exchange Consequence of Allotment	Proponent
88*	4163	353	Reduction of 353 AUM	Montieth
90	None	N/A	N/A	Roundtree
91	4142	24	Reduction of 24 AUM	Wyman
91*	4146	10	Reduction of 10 AUM	Wyman
93	4163	353	Reduction of 353 AUM	Cross Mountain
94	4163	353	Reduction of 353 AUM	Cross Mountain
95	4163	353	Reduction of 353 AUM	Cross Mountain
96	4163	353	Reduction of 353 AUM	Cross Mountain
97	4163	353	Reduction of 353 AUM	Cross Mountain
98	4163	353	Reduction of 353 AUM	Cross Mountain
99	4163	353	Reduction of 353 AUM	Cross Mountain
101	4163	353	Reduction of 353 AUM	Hunter/ Cross Mountain
101	4656	381	Reduction of 381 AUM	Hunter/ Cross Mountain
102	4167	435	Cancellation of Allotment	Hunter
104	4656	381	Reduction of 381 AUM	Hunter
104	4167	435	Cancellation	Hunter

TABLE 7.3-1
Range Management Summary
Grazing Allotments by Parcel Number
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Grazing Allotment	# AUMs in Allotment	Exchange Consequence of Allotment	Proponent
104A*	4170	23	Reduction of 23 AUM	Brusca
104B*	4170	23	Reduction of 23 AUM	Boehm
104C*	4170	23	Reduction of 23 AUM	Boehm
104D*	4170	23	Reduction of 23 AUM	Monroe
105	None	N/A	N/A	Jones
105A	4182	36	Cancellation of Allotment	A. Maneotis
105B	4182	36	Cancellation of Allotment	A. Maneotis
105C	4182	36	Cancellation of Allotment	A. Maneotis
106	4149	78	Cancellation of Allotment	Cosby
107	4148	64	Cancellation of Allotment	Cross Mountain
108	4149	78	Cancellation of Allotment	Cosby
109	4149	78	Cancellation of Allotment	Cosby
110	4153	23	Cancellation of Allotment	Omlid
111*	4127	12	Cancellation of Allotment	Omlid
111	4153	23	Cancellation of Allotment	Omlid
112	4127	12	Cancellation	Signs

TABLE 7.3-1
Range Management Summary
Grazing Allotments by Parcel Number
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Grazing Allotment	# AUMs in Allotment	Exchange Consequence of Allotment	Proponent
112*	4149	78	Cancellation of Allotment	Signs
113	4149	78	Cancellation of Allotment	Cosby
114	4166	19	Reduction of 19 AUM	Hunter
114B	4167	435	Cancellation of Allotment	J. Maneotis
114B	4186	157	Cancellation of Allotment	J. Maneotis
114C	4186	157	Cancellation of Allotment	J. Maneotis
115*	4186	157	Cancellation of Allotment	Wertenteil
115A	4186	157	Cancellation of Allotment	Maneotis
116*	4186	157	Cancellation of Allotment	Pinnacle Peak
117	4064	18	Cancellation of Allotment	Pinnacle Peak
118	4064	18	Cancellation of Allotment	Pinnacle Peak
118A	None	N/A	N/A	Viele
119	4064	18	Cancellation of Allotment	Pinnacle Peak
120*	4168	9	Reduction of 9 AUM	Crawford
121	4187	6	Cancellation of Allotment	Craig
123	4192	55	Reduction of 55 AUM	Broken Bone Ranch

TABLE 7.3-1
Range Management Summary
Grazing Allotments by Parcel Number
Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Grazing Allotment	# AUMs in Allotment	Exchange Consequence	Proponent
124	4192	55	Reduction of 55 AUM	Broken Bone Ranch
125	4192	55	Reduction of 55 AUM	Broken Bone Ranch
126	4192	55	Reduction of 55 AUM	Broken Bone Ranch
128	4192	55	Reduction of 55 AUM	Broken Bone Ranch
129	4192	55	Reduction of 55 AUM	R&T Land & Cattle
130	4183	15	Cancellation of Allotment	Brooks
131	4654	40	Cancellation of Allotment	Krausgrill/ Horowitz

* Indicates parcels with grazing lessees other than the exchange proponent.

TABLE 7.3-2
Range Management Summary
Per Grazing Allotments
Selected Federal Parcels
Emerald Mountain Land Exchange

Grazing Allotment #	Parcels in Allotment	# AUM on Exchange Parcels	# AUM in Allotment	Exchange Consequence
4011	8, 9	6	6	Cancellation of Allotment
4014	6	34	80	Reduction of 34 AUM
4015	1, 2	22	22	Cancellation of Allotment
4016	2, 5	53	53	Cancellation of Allotment
4018	4	4	212	Reduction of 4 AUM
4019	3, 4	3	277	Reduction of 3 AUM
4064	117, 118, 119	18	18	Cancellation of Allotment
4091	16	102	364	Reduction of 102 AUM
4093	16, 17, 18, 19, 20, 24, 26, 27, 28, 31, 32, 33, 54, 55, 56, 57	298	298	Cancellation of Allotment
4094	24, 25, 26, 28, 29	63	63	Cancellation of Allotment
4095	25	13	74	Reduction of 13 AUM
4096	52	8	42	Reduction of 8 AUM
4098	37, 38, 39, 40, 58, 61, 65, 66	418	418	Cancellation of Allotment
4099	64	9	9	Cancellation of Allotment
4101	62, 63	20	20	Cancellation of Allotment
4102	58, 59, 60, 62, 63, 70	113	113	Cancellation of Allotment
4104	71	36	36	Cancellation of Allotment
4105	69	16	16	Cancellation of Allotment
4110	37, 38, 42, 45, 46 125	125	125	Cancellation of Allotment

TABLE 7.3-2
Range Management Summary
Per Grazing Allotments
Selected Federal Parcels
Emerald Mountain Land Exchange

Grazing Allotment #	Parcels in Allotment	# AUM on Exchange Parcels	# AUM in Allotment	Exchange Consequence
4112	42	71	71	Cancellation of Allotment
4114	21A, 22A, 23	3	3	Cancellation of Allotment
4115	22, 22A, 23, 41, 47, 48, 49	250	250	Cancellation of Allotment
4117	12	8	8	Cancellation of Allotment
4118	14	7	7	Cancellation of Allotment
4119	13	7	16	Reduction of 7 AUM
4121	50	41	41	Cancellation of Allotment
4127	111, 112	12	12	Cancellation of Allotment
4142	91	24	340	Reduction of 24 AUM
4146	91	10	480	Reduction of 10 AUM
4148	107	64	64	Cancellation of Allotment
4149	106, 108, 109, 112, 113	78	78	Cancellation of Allotment
4153	110, 111	23	23	Cancellation of Allotment
4160	82A	11	11	Cancellation of Allotment
4161	80, 84, 85	23	25	Reduction of 23 AUM
4162	81, 85	8	8	Cancellation of Allotment
4163	82, 83A, 88, 93, 94, 95, 96, 97, 98, 99, 101	353	441	Reduction of 353 AUM
4166	114	19	378	Reduction of 19 AUM
4167	101, 102, 104, 114B	435	435	Cancellation of Allotment
4170	104A, 104B, 104C, 104D	23	213	Reduction of 23 AUM

TABLE 7.3-2
Range Management Summary
Per Grazing Allotments
Selected Federal Parcels
Emerald Mountain Land Exchange

Grazing Allotment #	Parcels in Allotment	# AUM on Exchange Parcels	# AUM in Allotment	Exchange Consequence	
4182	105A, 105B, 105C	36	36	Cancellation of Allotment	
4183	130	15	15	Cancellation of Allotment	
4186	114B, 114C, 115, 115A, 116	157	157	Cancellation of Allotment	
4187	121	6	6	Cancellation of Allotment	
4188	120	9	9	Cancellation of Allotment	
4192	123, 124, 125, 126, 128, 129	55	168	Reduction of 55 AUM	
4196	11	17	17	Cancellation of Allotment	
4640	76	8	8	Cancellation of Allotment	
4641	77	24	24	Cancellation of Allotment	
4643	15	2	2	Cancellation of Allotment	
4649	42, 44	36	36	Cancellation of Allotment	
4651	33	29	29	Cancellation of Allotment	
4652	67, 69	244	244	Cancellation of Allotment	
4654	131	40	40	Cancellation of Allotment	
4655	43	2	2	Cancellation of Allotment	
4656		101, 104	381	476	Reduction of 381 AUM
4657		21	3	3	Cancellation of Allotment
	Total AUM on Exchange Parcels		**3,895**		

TABLE 7.3-3
RANGE MANAGEMENT SUMMARY
OFFERED NON-FEDERAL PARCEL
EMERALD MOUNTAIN LAND EXCHANGE

Lease #	Acres Leased	Lease Expiration	Exchange Consequence
S-42828	246.69	March 2006	Lease will not be renewed
S-42829	4,391.7	March 2006	Lease will not be renewed
Total acres lease (@ 6.5 ac/AUM)	4,638.39		

TABLE 7.4-1
Existing Encumbrances on Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Exchange Proponent	Oil & Gas Lease	Coal Lease	Rights-of-way: Number & Type	Rights-of-way: Granted To
1	Sparks	COC 59206 – Energy Invst. Inc / Stone & Wolf COC 61738 – Stone & Wolf, LLC			
2	Marsh	COC 60937 – Energy Invst. Inc / Stone & Wolf COC 61063 – Stone & Wolf / Wilson Carroll			
3	Marsh	COC 59661 – Stone & Wolf, LLC		COC 56626 – Road	Lazy C2 Bar Ranch
4	Stull Ranches	COC 61739 – Stone & Wolf, Foster Exp., Mak J Energy Partners., Vintage Petroleum, Voyager Exp., Peninsular O&G, Monty Kastner			
5	Stull Ranches	COC 59206 – Clayton Williams Energy Inc.			
6	Stull Ranches	COC 59206 – Stone & Wolf, LLC			
8	Sheep Mtn Partnership	COC 60625 – Energy Invst. Inc / Stone & Wolf			
9	Sheep Mtn Partnership	COC 59986 – Energy Invst. Inc / Stone & Wolf			
12	Hill			COC 19229 – Water Plants	Hill
16	Rancho Greco/ Nottingham	COC 63297 – KLT Gas, Inc.		COC 48498 – Roads Federal	FS Routt

TABLE 7.4-1
Existing Encumbrances on Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Exchange Proponent	Oil & Gas Lease	Coal Lease	Rights-of-way Number & Type	Rights-of-way Granted To
		COC 64223 – Tipperary O & G Corp		Fac	
17	Nottingham	COC 64223 – Tipperary O & G Corp			
18	Nottingham	COC 64223 – Tipperary O & G Corp			
19	Nottingham	COC 64223 – Tipperary O & G Corp			
20	Nottingham	COC 64222 – Conoco Philips Co.			
24	Nottingham/Murphy	COC 63297 – KLT Gas Inc.		COC 36300 – Power Tran	Yampa Valley Electric
		COC 63298 – Infinity O & G of Wyoming		COC 49098 – Tel & Teleg	Qwest Corp.
25	J. Spitzley	COC 63295 – KLT Gas Inc.			
26	Nottingham/Murphy	COC 63297 – KLT Gas Inc.			
27	Nottingham	COC 63297 – KLT Gas Inc.			
28	Nottingham/Murphy	COC 63297 – KLT Gas Inc.			
31	Cook	COC 63300 – Infinity O & G of Wyoming			
32	Nottingham	COC 63300 – Infinity O & G of Wyoming			
33	Nottingham	COC 63303 – Infinity			

TABLE 7.4-1
Existing Encumbrances on Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Exchange Proponent	Oil & Gas Lease	Coal Lease	Rights-of-way Number & Type	Rights-of-way Granted To
		O & G of Wyoming			
40	Smith Rancho	COC 63288 – KLT Gas Inc. COC 63292 – Infinity O & G of Wyoming			
46	Meadows Realty			COC 039382 – Roads	Meadows Realty
50	State Land Board			COC 17554 – Power Tran COC 45743 – Water Facility COC 072844 – Water Plants	Yampa Valley Elec. Taylor Creek Ranch Milligan James D
52	State Land Board	COC 64219 – Conoco Philips Co.			
54	Nottingham	COC 64221 – Conoco Philips Co.			
55	Nottingham	COC 64221 – Conoco Philips Co.			
56	Nottingham	COC 64221 – Conoco Philips Co.			
57	Nottingham	COC 64221 – Conoco Philips Co.			
58	Smith Rancho/Waltrip	COC 63288 – KLT Gas Inc. COC 63289 – American General Partnership		COC 032352 – Irrigation Facility	Elmer Marie

TABLE 7.4-1
Existing Encumbrances on Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Exchange Proponent	Oil & Gas Lease	Coal Lease	Rights-of-way Number & Type	Rights-of-way Granted To
59	Waltrip	COC 39889 – Norman Foster, MS Johnson, Richard Vincelette, Pacific Enterprs. Oil, Chandler Energy, AG Andrikopoulos Res.			
60	Waltrip	COC 39889 – Norman Foster, MS Johnson, Richard Vincelette, Pacific Enterprs. Oil, Chandler Energy, AG Andrikopoulos Res.			
61	Smith Rancho	COC 63290 – KLT Gas Inc.			
62	Waltrip	COC 39889 – Norman Foster, MS Johnson, Richard Vincelette, Pacific Enterprs. Oil, Chandler Energy, AG Andrikopoulos Res.			
63	Waltrip	COC 39889 – Norman Foster, MS Johnson, Richard Vincelette, Pacific Enterprs. Oil, Chandler Energy, AG Andrikopoulos Res.			
66	Smith Rancho	COC 39889 –			

TABLE 7.4-1
Existing Encumbrances on Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Exchange Proponent	Oil & Gas Lease	Coal Lease	Rights-of-way: Number & Type	Rights-of-way: Granted To
		Norman Foster, MS Johnson, Richard Vincelette, Pacific Enterprs. Oil, Chandler Energy, AG Andrikopoulos Res.			
73	Frentress	COC 57089 – Antelope Energy Co. LLC			
77	Iacovetto	COC 56893 – Millennium O & G LLC			
78	Solo			COC 36304 – Transmiss-Irrig Project	Yampa Valley Elec
				COC 22105 – Irrigation Project	BR Great Plains Region
				COC 12349 – Transmission Line	DOE WAPA Rocky Mtn Region
80	Ricks	COC 65978 – Cabot O & G Corp. COC 7796 – Booco's Contract Svc.			
81	Ricks		COC 081258 – Seneca Coal Co.		
83a	Cross Mountain	COC 59177– Linbeck Partners, Merrill Whitehead III, Rocky Mt. Resources, McCauley &			

TABLE 7.4-1
Existing Encumbrances on Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Exchange Proponent	Oil & Gas Lease	Coal Lease	Rights-of-way Number & Type	Rights-of-way Granted To
		Assoc.			
84	Patrick	COC 122676 – Booco's Contract Svc.	COC0114093 – Seneca Coal Co.		
85	Ricks	COC 59178 – Linbeck Partners, Merrill Whitehead III, Rocky Mt. Resources, McCauley & Assoc.		COC 36303 – Transmission COC 55064 – Alluvial Wells, Flumes, Sedimentation Pond	Yampa Valley Elec Seneca Coal Co
88	Montieth	COC 57715 – Palo Prod. Corp.			
90	Roundtree			COC 31655 – Roads COC 36350 – Tel & Teleg.	Big Valley Ranch HOA Qwest Corp
91	Wyman, L	COC 65994 – Cabot O & G Corp.		COC 067489 – Roads	Wyman
97	Cross Mountain			COC 23293 – Oil & Gas Pipeline	Public Service Co. of Colorado
101	Cross Mountain/ Hunter	COC 7796 – Booco's Contract Svc. COC 59175 – Linbeck Partners, Merrill Whitehead III, Rocky Mt. Resources, McCauley & Assoc.			
104	Hunter	COC 64217 – Lynn Properties			

TABLE 7.4-1
Existing Encumbrances on Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Exchange Proponent	Oil & Gas Lease	Coal Lease	Rights-of-way Number & Type	Rights-of-way Granted To
104a	Brusca	COC 64216 – Lynn Properties		COC 29365 – Power Tran COC 25781 – Tel & Teleg	Yampa Valley Electric Qwest Corp
104b		COC 64216 – Lynn Properties		COC 25781 – Tel & Teleg	Qwest Corp
104c		COC 64216 – Lynn Properties			
104d					
105a	Maneotis, A.			COC 010604 – Power Facilities	Yampa Valley Electric
105c	Maneotis, A.				
109	Cosby			COC 0119942 – Irrigation Facility	Livingston
112	Signs			COC 28603 – Tel & Teleg	Qwest Corp
114	Hunter			COC 23293 – Oil & Gas Pipelines	Public Service Co of Colorado
114c	Maneotis, J.	COC 61729 – Medallion Expl.			
115	Wertenteil	COC 61729 – Medallion Expl.			
115a	Maneotis, J.	COC 61729 – Medallion Expl.			
116	Pinnacle Peak	COC 61729 – Medallion Expl.			
119	Pinnacle Peak			COC 23293 – Oil & Gas Pipelines	Public Service Co. of Colorado
120	Crawford			COC 26963 – Transmission Line	Yampa Valley Elec

TABLE 7.4-1
Existing Encumbrances on Selected Federal Parcels
Emerald Mountain Land Exchange

Parcel	Exchange Proponent	Oil & Gas Lease	Coal Lease	Rights-of-way Number & Type	Rights-of-way Granted To
				COC 25898 – Communication Site	Qwest Corp
121	Craig			COC 17446 – Power Transmission Line	Public Service Co of Colorado
129	R & T Land & Cattle			COC 0123869 I Irrigation Facility	Nieman Chas W

TABLE 7.4-2
Existing Encumbrances
Emerald Mountain Parcel
Emerald Mountain Land Exchange

Right-of-Way Number & Type	Granted To
0864-08 – Roadway	Routt County BOCC
1433-14 - Transmission Line	Bureau of Reclamation
1764-17 – Transmission Line	Yampa Valley Electric Assoc.
2044-20 – Transmission Line	Public Service Company of CO.
2160-21 – Transmission Line	Bureau of Reclamation
2519-25 – Transmission Line	Mtn. States Telephone & Telegraph Co.
2855-28 - Roadway	Routt County BOCC
2899-28 – Communications	US West Communications
2978-29 – Road easement	State Land Board
40743-Air Naviagation Site	Federal Aviation Agency

TABLE 7.6-1
Routt County Employment
Emerald Mountain Land Exchange

Economic Sector	Number in Labor Force	Percentage of Total
Agriculture	823	4.6
Mining and Extractive Industries	518	2.9
Construction	3,124	17.3
Manufacturing	194	0.96
Transportation, Communications and Utilities	799	4.4
Wholesale and Retail Trade	3,749	20.8
Finance, Insurance and Real Estate	2,367	13.1
Services	4,806	26.6
Government	1,673	9.3

14.0 Figures

Figure 2. Colorado Plateau Aquifers

Figure 3. RMP Proposed Management Boundary

Figure 4. RMP Alternative 2 – Prescribed Physical Classes.

Figure 5. RMP Alternative 2 – Prescribed Social Classes.

Figure 6. RMP Alternative 2 – Prescribed Administrative Classes.

Figure 7. RMP Alternative 4 – Prescribed Physical Classes.

Figure 8. RMP Alternative 4 – Prescribed Social Classes.

Figure 9. RMP Alternative 4 – Prescribed Administrative Classes.

Appendix A. USFWS Determination for Canada Lynx

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
764 Horizon Drive, Building B
Grand Junction, Colorado 81506-3946

BLM LITTLE SNAKE FO
CRAIG, COLORADO 81625
2005 AUG -1 AM 11:45

IN REPLY REFER TO:
ES/CO: BLM/Little Snake FO
MS 65412 GJ

July 29, 2005

Memorandum

To: Field Manager, Bureau of Land Management, Little Snake Field Office, Craig, Colorado

From: Western Colorado Supervisor, Fish and Wildlife Service, Ecological Services, Grand Junction, Colorado

Subject: Emerald Mountain Land Exchange

The U.S. Fish and Wildlife Service received your June 15, 2005, correspondence requesting initiation of consultation for the Emerald Mountain Land Exchange Project. The Service has reviewed the biological assessment which accompanied your letter, and documents the effects of the action to federally listed endangered, threatened, candidate and proposed species that may be affected by your proposed action.

The Bureau of Land Management proposed to exchange 129 parcels of land totaling 15,621.04 acres, for 6,272.63 acres of Colorado State Land Board property on Emerald Mountain. The Service concurs with your "may affect, not likely to adversely affect" determination for the Canada lynx *(Lynx Canadensis).*

The selected Federal parcels contain approximately 1,790 acres of lynx habitat, which is unconsolidated from other lynx habitats on the Routt National Forest. The parcels are marginal in terms of habitat value for lynx, and are unmanageable because they are surrounded by private lands with no public access. The Emerald Mountain parcel contains approximately 2,115 acres of potential lynx habitat that is comparable in quality to the Federal parcels. The lynx habitat on Emerald Mountain is consolidated in one area, but is isolated from larger areas of lynx habitat on the Routt National Forest, and is too small to support lynx by itself. None of the parcels involved in the exchange are considered to be within a landscape linkage. Although there is a net gain of 324 acres of lynx habitat, this gain is limited by the isolation of the Emerald Mountain parcel from adjacent lynx habitats.

Management of the Emerald Mountain parcel has not been proposed. Management to consider alternative land uses will occur in the future and will be subject to section 7 consultation.

Concurrence is based upon the best scientific and commercial data available as described in the biological assessment. If new information becomes available, new species listed, or should there

be any changes to the project which alter the operation of the project from that which is described in the biological assessment, and which may affect any endangered or threatened species in a manner or to an extent not considered in the biological assessment, section 7 consultation should be reinitiated.

If the Service can be of further assistance, please contact Kurt Broderdorp at the letterhead address or (970) 243-2778, extension 24.

pc: FWS, Helena (Attn: Lori Nordstrom)

KBroderdorp:BLMLittleSnakeFOEmeraldMountainLandExchangeCL.doc:072905

APPENDIX B: Recreation Planning Tools

Natural Resource Settings and Benefits Based Management

Managing Recreation for Beneficial Outcomes

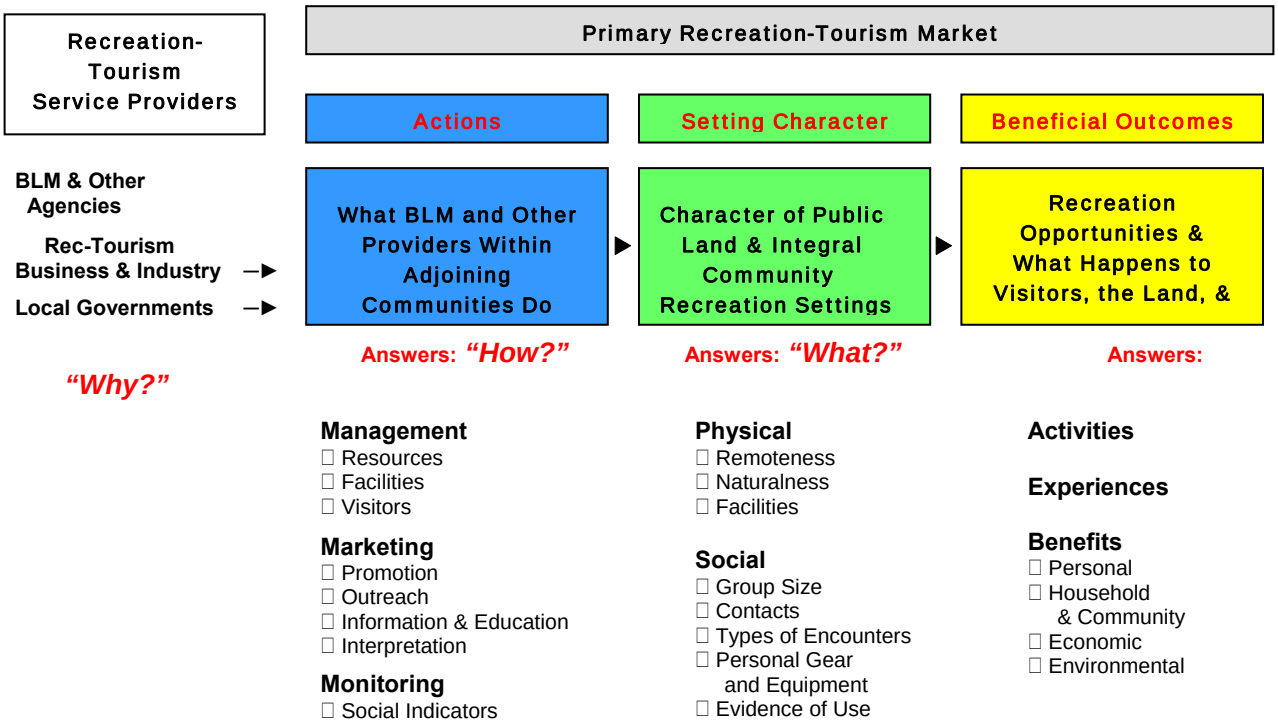
Both Bureau of Land Management (BLM) and other affecting community recreation-tourism providers actually determine what kinds of recreation opportunities will be produced, both by their actions and by the effects those actions have on recreation setting character. Consequent recreation use and its management either contributes to or detracts from the quality of life of individual participants, households and communities, their economies, and the environment itself. And this is why this RMP amendment is focused on beneficial outcomes and the management of recreation setting character!

Planning Requirements

Managing for beneficial outcomes consisting of experiences and other quality of life benefits requires shifting the focus of recreation management beyond facility developments, management controls, and providing programs and services. These projects and programs are important, but they are nonetheless only the means whereby more important ends, value-added experiences and benefits, may be attained.

Making this happen requires addressing all key components of recreation production within the *Recreation-Tourism Service Delivery System*. That's just shorthand for BLM, local, county, and municipal governments, and the businesses which provide essential recreation services for visitors. Table XXX shows that recreation opportunities are produced from left to right, from means to ends. But deciding how to craft those means requires first deciding what is to be provided.

Illustration XXX



- Environmental Indicators
- Administrative Indicators

Administrative
- Coop. Mgmt. Agreements with Other Providers
- Controls & Restrictions
- Permits & Fees
- Fiscal/Budget
- Implementing Partnerships

Administrative
- Visitor Services
- Mgmt. Controls
- Domestic Animals
- Individual User Fees
- Mechanized Use

Step 1: Targeting Benefits-Based Management Objectives

The specific experience and benefit outcomes targeted by management objectives were determined by considering supply and demand, including the capacity of each recreation management unit to produce desired recreation opportunities, the availability of other similar opportunities within the immediate market area, and the preferences of both visitors and resident customers.

For example, in terms of experiences, some are interested in being able to experience group affiliation and togetherness while others want to escape crowds and feel good about being isolated and independent. Some want risk-taking adventure while others want to know that there are others nearby who could help them if needed. In terms of beneficial outcomes, some recreation settings can be managed to provide opportunities for improved physical fitness and health maintenance, while others can be managed to reduce exposure to at-risk youth and lower juvenile delinquency rates. Others still can be managed to contribute positively to a community's economic stability, while others can be managed to promote greater resource stewardship and reduce wildlife harassment or other disturbance.

Significantly, not all kinds of recreation opportunities desired by everyone can be provided everywhere. More specifically, no one management unit can be all things to all people. Thus the plan targets those outcomes most appropriate to each unit, considering such factors as the capability of the land, the capacity of BLM and other collaborating providers to produce them, and relevant recreation-tourism market realities. Other compatible uses may occur within any given unit, in addition to those targeted by recreation management objectives. These will continue in direct proportion to the degree in which they can continue without hindering the attainment of targeted experience and benefit outcomes.

What Goes in the Plan?

Recreation management objectives are displayed for each recreation Zone in a one-sentence statement that summarizes the most relevant recreation-tourism market niche and commits BLM and its managing partners to time-bound, area-bound, attainable, specific, and output-oriented results. Following that statement is a list of the activity, experience, and benefit opportunities specifically targeted.

Step 2: Prescribing Essential Recreation Setting Character

Opportunities for the attainment of desired experiences and benefits targeted above are produced through a combination of recreation setting character conditions and corresponding recreation-tourism provider actions. It takes both.
Because setting character is in turn determined by those actions, it is the next logical step in planning for recreation. Three broad recreation setting categories are involved, each affecting the production of opportunities for experiences and benefits: the *physical* character of the land and facilities, *social* interactions and contact with others, and the *administrative* mix of services and controls provided.

The character of any recreation setting may be objectively defined along a continuum ranging from primitive to urban in terms of variation of its component physical, social, and administrative

attributes. Collectively, these attributes define the character of any recreation setting. Setting character is directly influenced and determined by the management, marketing, and administrative actions of BLM and other affecting recreation-tourism providers. Those actions, and that setting character in turn, also affect and actually determine the kinds of recreation opportunities being produced.

Recognition of these component parts and the variation within each along this setting continuum is definitive. Specific criteria have been developed for each of several setting attributes within the three primary setting condition categories: physical, social, and administrative. These same criteria are used both to describe existing setting character classes and to prescribe desired future setting conditions.

What goes in the Plan?

Both existing setting descriptions and prescribed future setting conditions are portrayed both in tabular format and graphically in a map format. The tabular format shows what exists and what is prescribed, whereas the maps depict relative acreage within each class and where it occurs. At quick look at either the tables or maps reveals that most recreation management units are comprised of more than one recreation setting class.

Step 3: Formulating Management, Marketing, Monitoring, and Administrative Actions

These actions are accountable to both the outcomes-based objectives and to setting prescriptions. The fundamental question posed by managing for experience and benefits outcomes is, *"Why should any action be implemented?"* This question must be answered for recreation action in terms of its demonstrated capacity to achieve or sustain prescribed setting character conditions and produce targeted activity, experience, and benefit opportunities.

As an adaptive management plan, there will be significant interplay among management, marketing, and monitoring actions. Management actions are where BLM and its collaborating providers identify what they will be doing. Marketing actions are where those same managing partners inform customers what it is that is being provided. Marketing is therefore a tool both to help prospective visitors find the areas being managed to provide the experience and benefit opportunities they seek and to help BLM and its managing partners manage to achieve management objectives and prescriptions.

<u>1st: Recreation Management:</u> A careful assessment of actions included in the draft has been made to ensure that these are not only adequate but constrained as necessary to (a) achieve and sustain the prescribed character of recreation settings and (b) produce the activity, experience, and benefit opportunities targeted in management objectives.

<u>2nd: Recreation Marketing</u>: BLM has taken a second look at potential marketing actions to ensure that these likewise are consistent with the recreation opportunities and setting character conditions the plan says will be manage for AND be balanced among themselves to enable both visitor and resident customers to match up their preferences for recreation's value-added outcomes with the areas and activities that offer them.

<u>3rd: Recreation Monitoring</u>: These actions are geared to determine whether the effect of plan implementation in all three columns of the recreation production process is on target. Monitoring actions are tied directly to each of the three above steps. Social indicators and standards are derived directly from recreation management objectives, and they require that BLM and its provider-partners talk to its customers to assess the degree to which the objectives are being met.

Environmental indicators and standards are derived directly from recreation setting prescriptions, but here direct observations will suffice to determine whether or not prescribed setting character is being achieved and sustained. Administrative indicators and standards require the exercise of due

diligence to determine whether management, marketing, and administrative support actions are being implemented as planned.

Adaptively, monitoring can be expected to identify changes to these implementing actions as needed to achieve plan outcomes objectives and setting prescriptions. By the same token, setting prescriptions themselves may need to be adjusted to achieve the production and attainment of targeted experience and benefit outcomes.

4th: Recreation Administration: All administrative actions have been checked to ensure they support the sustainable achievement of management objectives, setting prescriptions, and implementing actions. Monitoring will ensure that administrative actions continue to play this supporting role.

What goes in the Plan?

Include a list of all the implementing actions required to achieve targeted benefits-based management objectives and recreation setting character prescriptions. But adaptively, this list is subject to change as necessary to achieve both setting prescriptions and benefits-based management objectives. That determination will be based on monitoring and evaluation.

Appendix C: Natural Resource Recreation Settings Matrix

Alternative 2 - Recreation Management Zone 1 (Mountain Ridge)

Appendix C

NATURAL RESOURCE RECREATION SETTINGS

Criteria for Classification and Prescriptions

Existing | Prescribed

* Primary recreation setting characteristic

PHYSICAL – RESOURCES & FACILITIES: character of the natural landscape

	Primitive		*Back Country*	*Middle Country*	*Front Country*	*Rural*	*Urban*
	Pristine	*Transition*					
*** Remoteness:**	*More than10 mi. from any road*	*More than 3 mi. from any road*	*More than ½ mile from any kind of road, but not as distant as 3 miles, and no road is in sight*	*On or near four-wheel drive roads, but at least ½ mile from all improved roads, though they may be in sight*	*On or near improved country roads, but at least ½ mile from all highways*	*On or near primary highways, but still within a rural area*	*On or near primary highways, municipal streets, and roads within towns or cities*
Naturalness:	*Undisturbed natural landscape*		*Naturally-appearing landscape having modifications not readily noticeable*	*Naturally-appearing landscape except for obvious primitive roads*	*Landscape partially modified by roads, utility lines, etc., but none overpower natural landscape features*	*Natural landscape substantially modified by agriculture or industrial development*	*Urbanized developments dominate this landscape*
Facilities:	*None*		*Some primitive trails made of native materials such as log bridges and carved wooden signs*	*Maintained and marked trails, simple trailhead developments, improved signs, and very basic toilets*	*Improved yet modest, rustic facilities such as camp grounds, restrooms, trails, and interpretive signs*	*Modern facilities such as campgrounds, group shelters, boat launches, and occasional exhibits*	*Elaborate full-service facilities such as laundry, groceries, and book stores*

SOCIAL – VISITOR USE & USERS: character of recreation & tourism use

	Primitive		*Back Country*	*Middle Country*	*Front Country*	*Rural*	*Urban*
	Pristine	*Transition*					
Group Size (other than your own):	*Fewer than or equal to 3 people per group*		*4-6 people per group*	*7-12 people per group*	*13-25 people per group*	*26-50 people per group*	*Greater than 50 people per group*
*** Contacts (with other groups):**	*Fewer than 3 encounters/day at camp sites and fewer than 6 encounters/day on travel routes*		*3-6 encounters/day off travel routes (e.g., campsites) and 7-15 encounters/day on travel routes*	*7-14 encounters/day off travel route (e.g., staging areas) and 15-29 encounters/ day en route*	*15-29 encounters/day off travel routes (e.g., campgrounds) and 30 or more encounters/day en route*	*People seem to be everywhere, but human contact is still intermittent*	*Other people constantly in view*
Types of Encounters:	*Users plan trips to avoid others altogether*	*Take evasive actions for face-to-face avoidance*	*Users step aside to avoid unsafe conditions or user conflicts, sometimes grudgingly*	*Users may be unnerved but may not necessarily move off routes, areas, or sites to accommodate others*	*Users here routinely expect, welcome, and accommodate other visitors*	*Because crowd tolerance is a necessary condition for being here, encounters tend to be impersonal*	*Here people accept but routinely ignore multiple crowd interaction*
Personal Gear & Equipment:	*Very basic gear, cell phones usually don't work here*	*Some convenience gear like cell phones but not radios*	*Expect hiking,, climbing, & mountain bike gear (e.g., colorful sportswear, bicycle helmets, etc.). Radios may also be playing*	*Expect to see gear associated with vehicle or off-highway vehicle use (e.g., coolers, body armor, etc.); some radios and music*	*Variety of traditional camper trailers, pop-up tents, & conventional tents; radio and music common*	*Upscale motor homes common, dependent on utility hookups or having generators to support home conveniences and gadgetry*	*Very specialized gear dependent on service provider assistance (e.g., boat slips, grounds keepers, caretakers)*
Evidence of Use:	*Only footprints may be observed*		*Footprints plus slight vegetation trampling at campsites & travel routes. Only infrequent litter*	*Vehicle tracks and occasional litter and soil erosion. Vegetation becoming worn*	*Well-worn soils and vegetation, but often gravel surfaced for erosion control. Litter may be frequent.*	*Paved routes protect soils and vegetation, but noise, litter, and facility impacts are pervasive*	*A busy place with what seems like constant noise. Unavoidable litter seems to be a lifestyle choice*

ADMINISTRATIVE – ADMINISTRATIVE & SERVICE SETTING: How Public Land Managers, County Commissioners and Municipal Governments, and Local Businesses Care for the Area and Serve Visitors and Local Residents

	Primitive		*Back Country*	*Middle Country*	*Front Country*	*Rural*	*Urban*
	Pristine	*Transition*					
Visitor Services:	*None is available on-site*		*Basic maps, but area personnel seldom available to provide on-site assistance*	*Area brochures and maps, plus area personnel occasionally present to provide on-site assistance*	*Information materials describe recreation areas and activities. Area personnel are periodically available*	*Everything described to the left in this row, and describe experiences/benefits available. Area personnel do on-site education*	*Everything described to the left in this row, plus regularly scheduled on-site outdoor skills demonstrations and clinics*
Management Controls:	*No visitor controls apparent. No use limits. Enforcement presence very rare.*		*Signs at key access points on basic user ethics. May have back country use restrictions. Enforcement presence rare*	*Occasional regulatory signing. Motorized and mechanized use restrictions. Random enforcement presence*	*Rules clearly posted with some seasonal or day-of-week use restrictions. Periodic enforcement presence*	*Regulations prominent. Total use limited y permit, reservation, etc. Routine enforcement presence.*	*Continuous enforcement to redistribute use and reduce user conflicts, hazards, and resource damage*
Domestic Animals:	*Domestic animals neither present nor allowed*	*No domestic animals except for working dogs or pack stock*	*Non-working as well as working domestic animals (e.g., sheep dogs, sled dogs, etc.) under owner's voice/whistle control*	*Leash-free area for dogs, and pack stock may be packed, ridden or tethered anywhere*	*Within recreation areas, all dogs on leash, and separate areas provided for pack stock; all animals controlled elsewhere*	*Domestic animals prohibited at recreation sites and other high-use areas; all animals controlled elsewhere*	*Domestic animals seemingly everywhere present, but subject to at least some kind of controls or restrictions (e.g., horse diapers)*
Individual User Fees:	*No individual user fees*		*Individual user fees charged within certain back country areas*	*Additional fees charged individuals at some developed recreation sites, but not for any dispersed recreation use*	*Individual user fees charged at all developed sites, but not yet for any dispersed recreation use*	*Individual user fees charged at all developed sites and for dispersed use within high-use areas only*	*Individual user fees charged for all recreation use*
*** Mechanized Use (any):**	*None whatsoever*		*Mountain bikes and perhaps other mechanized use, but all is non-motorized*	*Four-wheel drives, all-terrain vehicles, dirt bikes, or snowmobiles in addition to non-motorized, mechanized use*	*Two-wheel drive vehicles predominant, but also four wheel drives and non-motorized, mechanized use*	*Ordinary highway auto and truck traffic is characteristic*	*Wide variety of street vehicles and highway traffic is ever-present*

Alternative 2 - Recreation Management Zone 2 (East Cow Creek)

NATURAL RESOURCE RECREATION SETTINGS

Criteria for Classification and Prescriptions

Existing | **Prescribed**

* Primary recreation setting characteristic

PHYSICAL – RESOURCES & FACILITIES: character of the natural landscape

	Primitive		*Back Country*	*Middle Country*	*Front Country*	*Rural*	*Urban*
	Pristine	*Transition*					
*** Remoteness:**	*More than10 mi. from any road*	*More than 3 mi. from any road*	*More than ½ mile from any kind of road, but not as distant as 3 miles, and no road is in sight*	*On or near four-wheel drive roads, but at least ½ mile from all improved roads, though they may be in sight*	*On or near improved country roads, but at least ½ mile from all highways*	*On or near primary highways, but still within a rural area*	*On or near primary highways, municipal streets, and roads within towns or cities*
Naturalness:	*Undisturbed natural landscape*		*Naturally-appearing landscape having modifications not readily noticeable*	*Naturally-appearing landscape except for obvious primitive roads*	*Landscape partially modified by roads, utility lines, etc., but none overpower natural landscape features*	*Natural landscape substantially modified by agriculture or industrial development*	*Urbanized developments dominate this landscape*
Facilities:	*None*		*Some primitive trails made of native materials such as log bridges and carved wooden signs*	*Maintained and marked trails, simple trailhead developments, improved signs, and very basic toilets*	*Improved yet modest, rustic facilities such as camp grounds, restrooms, trails, and interpretive signs*	*Modern facilities such as campgrounds, group shelters, boat launches, and occasional exhibits*	*Elaborate full-service facilities such as laundry, groceries, and book stores*

SOCIAL – VISITOR USE & USERS: character of recreation & tourism use

	Primitive		*Back Country*	*Middle Country*	*Front Country*	*Rural*	*Urban*
	Pristine	*Transition*					
Group Size (other than your own):	*Fewer than or equal to 3 people per group*		*4-6 people per group*	*7-12 people per group*	*13-25 people per group*	*26-50 people per group*	*Greater than 50 people per group*
*** Contacts (with other groups):**	*Fewer than 3 encounters/day at camp sites and fewer than 6 encounters/day on travel routes*		*3-6 encounters/day off travel routes (e.g., campsites) and 7-15 encounters/day on travel routes*	*7-14 encounters/day off travel route (e.g., staging areas) and 15-29 encounters/ day en route*	*15-29 encounters/day off travel routes (e.g., campgrounds) and 30 or more encounters/day en route*	*People seem to be everywhere, but human contact is still intermittent*	*Other people constantly in view*
Types of Encounters:	*Users plan trips to avoid others altogether*	*Take evasive actions for face-to-face avoidance*	*Users step aside to avoid unsafe conditions or user conflicts, sometimes grudgingly*	*Users may be unnerved but may not necessarily move off routes, areas, or sites to accommodate others*	*Users here routinely expect, welcome, and accommodate other visitors*	*Because crowd tolerance is a necessary condition for being here, encounters tend to be impersonal*	*Here people accept but routinely ignore multiple crowd interaction*
Personal Gear & Equipment:	*Very basic gear, cell phones usually don't work here*	*Some convenience gear like cell phones but not radios*	*Expect hiking, climbing, & mountain bike gear (e.g., colorful sportswear, bicycle helmets, etc.). Radios may also be playing*	*Expect to see gear associated with vehicle or off-highway vehicle use (e.g., coolers, body armor, etc.); some radios and music*	*Variety of traditional camper trailers, pop-up tents, & conventional tents; radio and music common*	*Upscale motor homes common, dependent on utility hookups or having generators to support home conveniences and gadgetry*	*Very specialized gear dependent on service provider assistance (e.g., boat slips, grounds keepers, caretakers)*
Evidence of Use:	*Only footprints may be observed*		*Footprints plus slight vegetation trampling at campsites & travel routes. Only infrequent litter*	*Vehicle tracks and occasional litter and soil erosion. Vegetation becoming worn*	*Well-worn soils and vegetation, but often gravel surfaced for erosion control. Litter may be frequent.*	*Paved routes protect soils and vegetation, but noise, litter, and facility impacts are pervasive*	*A busy place with what seems like constant noise. Unavoidable litter seems to be a lifestyle choice*

ADMINISTRATIVE – ADMINISTRATIVE & SERVICE SETTING: How Public Land Managers, County Commissioners and Municipal Governments, and Local Businesses Care for the Area and Serve Visitors and Local Residents

	Primitive		*Back Country*	*Middle Country*	*Front Country*	*Rural*	*Urban*
	Pristine	*Transition*					
Visitor Services:	*None is available on-site*		*Basic maps, but area personnel seldom available to provide on-site assistance*	*Area brochures and maps, plus area personnel occasionally present to provide on-site assistance*	*Information materials describe recreation areas and activities. Area personnel are periodically available*	*Everything described to the left in this row, and describes experiences/benefits available. Area personnel do on-site education*	*Everything described to the left in this row, plus regularly scheduled on-site outdoor skills demonstrations and clinics*
Management Controls:	*No visitor controls apparent. No use limits. Enforcement presence very rare.*		*Signs at key access points on basic user ethics. May have back country use restrictions. Enforcement presence rare*	*Occasional regulatory signing. Motorized and mechanized use restrictions. Random enforcement presence*	*Rules clearly posted with some seasonal or day-of-week use restrictions. Periodic enforcement presence*	*Regulations prominent. Total use limited y permit, reservation, etc. Routine enforcement presence.*	*Continuous enforcement to redistribute use and reduce user conflicts, hazards, and resource damage*
Domestic Animals:	*Domestic animals neither present nor allowed*	*No domestic animals except for working dogs or pack stock*	*Non-working as well as working domestic animals (e.g., sheep dogs, sled dogs, etc.) under owner's voice/whistle control*	*Leash-free area for dogs, and pack stock may be packed, ridden or tethered anywhere*	*Within recreation areas, all dogs on leash, and separate areas provided for pack stock; all animals controlled elsewhere*	*Domestic animals prohibited at recreation sites and other high-use areas; all animals controlled elsewhere*	*Domestic animals seemingly everywhere present, but subject to at least some kind of controls or restrictions (e.g., horse diapers)*
Individual User Fees:	*No individual user fees*		*Individual user fees charged within certain back country areas*	*Additional fees charged individuals at some developed recreation sites, but not for any dispersed recreation use*	*Individual user fees charged at all developed sites, but not yet for any dispersed recreation use*	*Individual user fees charged at all developed sites and for dispersed use within high-use areas only*	*Individual user fees charged for all recreation use*
*** Mechanized Use (any):**	*None whatsoever*		*Mountain bikes and perhaps other mechanized use, but all is non-motorized*	*Four-wheel drives, all-terrain vehicles, dirt bikes, or snowmobiles in addition to non-motorized, mechanized use*	*Two-wheel drive vehicles predominant, but also four wheel drives and non-motorized, mechanized use*	*Ordinary highway auto and truck traffic is characteristic*	*Wide variety of street vehicles and highway traffic is ever-present*

Alternative 4 - Recreation Management Zone 1 (Mountain Ridge)

NATURAL RESOURCE RECREATION SETTINGS

Criteria for Classification and Prescriptions

Existing | **Prescribed**

PHYSICAL – RESOURCES & FACILITIES: character of the natural landscape

* Primary recreation setting characteristic

	Primitive *Pristine*	*Transition*	*Back Country*	*Middle Country*	*Front Country*	*Rural*	*Urban*
*** Remoteness:**	*More than10 mi. from any road*	*More than 3 mi. from any road*	*More than ½ mile from any kind of road, but not as distant as 3 miles, and no road is in sight*	*On or near four-wheel drive roads, but at least ½ mile from all improved roads, though they may be in sight*	*On or near improved country roads, but at least ½ mile from all highways*	*On or near primary highways, but still within a rural area*	*On or near primary highways, municipal streets, and roads within towns or cities*
Naturalness:	*Undisturbed natural landscape*		*Naturally-appearing landscape having modifications not readily noticeable*	*Naturally-appearing landscape except for obvious primitive roads*	*Landscape partially modified by roads, utility lines, etc., but none overpower natural landscape features*	*Natural landscape substantially modified by agriculture or industrial development*	*Urbanized developments dominate this landscape*
Facilities:	*None*		*Some primitive trails made of native materials such as log bridges and carved wooden signs*	*Maintained and marked trails, simple trailhead developments, improved signs, and very basic toilets*	*Improved yet modest, rustic facilities such as camp grounds, restrooms, trails, and interpretive signs*	*Modern facilities such as campgrounds, group shelters, boat launches, and occasional exhibits*	*Elaborate full-service facilities such as laundry, groceries, and book stores*

SOCIAL – VISITOR USE & USERS: character of recreation & tourism use

	Primitive *Pristine*	*Transition*	*Back Country*	*Middle Country*	*Front Country*	*Rural*	*Urban*
Group Size (other than your own):	*Fewer than or equal to 3 people per group*		*4-6 people per group*	*7-12 people per group*	*13-25 people per group*	*26-50 people per group*	*Greater than 50 people per group*
*** Contacts (with other groups):**	*Fewer than 3 encounters/day at camp sites and fewer than 6 encounters/day on travel routes*		*3-6 encounters/day off travel routes (e.g., campsites) and 7-15 encounters/day on travel routes*	*7-14 encounters/day off travel route (e.g., staging areas) and 15-29 encounters/ day en route*	*15-29 encounters/day off travel routes (e.g., campgrounds) and 30 or more encounters/day en route*	*People seem to be everywhere, but human contact is still intermittent*	*Other people constantly in view*
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Personal Gear & Equipment:	*Very basic gear, cell phones usually don't work here*	*Some convenience gear like cell phones but not radios*	*Expect hiking,, climbing, & mountain bike gear (e.g., colorful sportswear, bicycle helmets, etc.). Radios may also be playing*	*Expect to see gear associated with vehicle or off-highway vehicle use (e.g., coolers, body armor, etc.); some radios and music*	*Variety of traditional camper trailers, pop-up tents, & conventional tents; radio and music common*	*Upscale motor homes common, dependent on utility hookups or having generators to support home conveniences and gadgetry*	*Very specialized gear dependent on service provider assistance (e.g., boat slips, grounds keepers, caretakers)*
Evidence of Use:	*Only footprints may be observed*		*Footprints plus slight vegetation trampling at campsites & travel routes. Only infrequent litter*	*Vehicle tracks and occasional litter and soil erosion. Vegetation becoming worn*	*Well-worn soils and vegetation, but often gravel surfaced for erosion control. Litter may be frequent.*	*Paved routes protect soils and vegetation, but noise, litter, and facility impacts are pervasive*	*A busy place with what seems like constant noise. Unavoidable litter seems to be a lifestyle choice*

ADMINISTRATIVE – ADMINISTRATIVE & SERVICE SETTING: How Public Land Managers, County Commissioners and Municipal Governments, and Local Businesses Care for the Area and Serve Visitors and Local Residents

	Primitive *Pristine*	*Transition*	*Back Country*	*Middle Country*	*Front Country*	*Rural*	*Urban*
Visitor Services:	*None is available on-site*		*Basic maps, but area personnel seldom available to provide on-site assistance*	*Area brochures and maps, plus area personnel occasionally present to provide on-site assistance*	*Information materials describe recreation areas and activities. Area personnel are periodically available*	*Everything described to the left in this row, and describe experiences/benefits available. Area personnel do on-site education*	*Everything described to the left in this row, plus regularly scheduled on-site outdoor skills demonstrations and clinics*
Management Controls:	*No visitor controls apparent. No use limits. Enforcement presence very rare.*		*Signs at key access points on basic user ethics. May have back country use restrictions. Enforcement presence rare*	*Occasional regulatory signing. Motorized and mechanized use restrictions. Random enforcement presence*	*Rules clearly posted with some seasonal or day-of-week use restrictions. Periodic enforcement presence*	*Regulations prominent. Total use limited y permit, reservation, etc. Routine enforcement presence.*	*Continuous enforcement to redistribute use and reduce user conflicts, hazards, and resource damage*
Domestic Animals:	*Domestic animals neither present nor allowed*	*No domestic animals except for working dogs or pack stock*	*Non-working as well as working domestic animals (e.g., sheep dogs, sled dogs, etc.) under owner's voice/whistle control*	*Leash-free area for dogs, and pack stock may be packed, ridden or tethered anywhere*	*Within recreation areas, all dogs on leash, and separate areas provided for pack stock; all animals controlled elsewhere*	*Domestic animals prohibited at recreation sites and other high-use areas; all animals controlled elsewhere*	*Domestic animals seemingly everywhere present, but subject to at least some kind of controls or restrictions (e.g., horse diapers)*
Individual User Fees:	*No individual user fees*		*Individual user fees charged within certain back country areas*	*Additional fees charged individuals at some developed recreation sites, but not for any dispersed recreation use*	*Individual user fees charged at all developed sites, but not yet for any dispersed recreation use*	*Individual user fees charged at all developed sites and for dispersed use within high-use areas only*	*Individual user fees charged for all recreation use*
*** Mechanized Use (any):**	*None whatsoever*		*Mountain bikes and perhaps other mechanized use, but all is non-motorized*	*Four-wheel drives, all-terrain vehicles, dirt bikes, or snowmobiles in addition to non-motorized, mechanized use*	*Two-wheel drive vehicles predominant, but also four wheel drives and non-motorized, mechanized use*	*Ordinary highway auto and truck traffic is characteristic*	*Wide variety of street vehicles and highway traffic is ever-present*

Alternative 4 - Recreation Management Zone 2 (East Cow Creek)

NATURAL RESOURCE RECREATION SETTINGS

Criteria for Classification and Prescriptions

Existing | **Prescribed**

PHYSICAL – RESOURCES & FACILITIES: character of the natural landscape

* Primary recreation setting characteristic

	Primitive: Pristine	Primitive: Transition	Back Country	Middle Country	Front Country	Rural	Urban
*** Remoteness:**	*More than10 mi. from any road*	*More than 3 mi. from any road*	*More than ½ mile from any kind of road, but not as distant as 3 miles, and no road is in sight*	*On or near four-wheel drive roads, but at least ½ mile from all improved roads, though they may be in sight*	*On or near improved country roads, but at least ½ mile from all highways*	*On or near primary highways, but still within a rural area*	*On or near primary highways, municipal streets, and roads within towns or cities*
Naturalness:	*Undisturbed natural landscape*		*Naturally-appearing landscape having modifications not readily noticeable*	*Naturally-appearing landscape except for obvious primitive roads*	*Landscape partially modified by roads, utility lines, etc., but none overpower natural landscape features*	*Natural landscape substantially modified by agriculture or industrial development*	*Urbanized developments dominate this landscape*
Facilities:	*None*		*Some primitive trails made of native materials such as log bridges and carved wooden signs*	*Maintained and marked trails, simple trailhead developments, improved signs, and very basic toilets*	*Improved yet modest, rustic facilities such as camp grounds, restrooms, trails, and interpretive signs*	*Modern facilities such as campgrounds, group shelters, boat launches, and occasional exhibits*	*Elaborate full-service facilities such as laundry, groceries, and book stores*

SOCIAL – VISITOR USE & USERS: character of recreation & tourism use

	Primitive: Pristine	Primitive: Transition	Back Country	Middle Country	Front Country	Rural	Urban
Group Size (other than your own):	*Fewer than or equal to 3 people per group*		*4-6 people per group*	*7-12 people per group*	*13-25 people per group*	*26-50 people per group*	*Greater than 50 people per group*
*** Contacts (with other groups):**	*Fewer than 3 encounters/day at camp sites and fewer than 6 encounters/day on travel routes*		*3-6 encounters/day off travel routes (e.g., campsites) and 7-15 encounters/day on travel routes*	*7-14 encounters/day off travel route (e.g., staging areas) and 15-29 encounters/ day en route*	*15-29 encounters/day off travel routes (e.g., campgrounds) and 30 or more encounters/day en route*	*People seem to be everywhere, but human contact is still intermittent*	*Other people constantly in view*
Types of Encounters:	*Users plan trips to avoid others altogether*	*Take evasive actions for face-to-face avoidance*	*Users step aside to avoid unsafe conditions or user conflicts, sometimes grudgingly*	*Users may be unnerved but may not necessarily move off routes, areas, or sites to accommodate others*	*Users here routinely expect, welcome, and accommodate other visitors*	*Because crowd tolerance is a necessary condition for being here, encounters tend to be impersonal*	*Here people accept but routinely ignore multiple crowd interaction*
Personal Gear & Equipment:	*Very basic gear, cell phones usually don't work here*	*Some convenience gear like cell phones but not radios*	*Expect hiking,, climbing, & mountain bike gear (e.g., colorful sportswear, bicycle helmets, etc.). Radios may also be playing*	*Expect to see gear associated with vehicle or off-highway vehicle use (e.g., coolers, body armor, etc.); some radios and music*	*Variety of traditional camper trailers, pop-up tents, & conventional tents; radio and music common*	*Upscale motor homes common, dependent on utility hookups or having generators to support home conveniences and gadgetry*	*Very specialized gear dependent on service provider assistance (e.g., boat slips, grounds keepers, caretakers)*
Evidence of Use:	*Only footprints may be observed*		*Footprints plus slight vegetation trampling at campsites & travel routes. Only infrequent litter*	*Vehicle tracks and occasional litter and soil erosion. Vegetation becoming worn*	*Well-worn soils and vegetation, but often gravel surfaced for erosion control. Litter may be frequent.*	*Paved routes protect soils and vegetation, but noise, litter, and facility impacts are pervasive*	*A busy place with what seems like constant noise. Unavoidable litter seems to be a lifestyle choice*

ADMINISTRATIVE – ADMINISTRATIVE & SERVICE SETTING: How Public Land Managers, County Commissioners and Municipal Governments, and Local Businesses Care for the Area and Serve Visitors and Local Residents

	Primitive: Pristine	Primitive: Transition	Back Country	Middle Country	Front Country	Rural	Urban
Visitor Services:	*None is available on-site*		*Basic maps, but area personnel seldom available to provide on-site assistance*	*Area brochures and maps, plus area personnel occasionally present to provide on-site assistance*	*Information materials describe recreation areas and activities. Area personnel are periodically available*	*Everything described to the left in this row, and describe experiences/benefits available. Area personnel do on-site education*	*Everything described to the left in this row, plus regularly scheduled on-site outdoor skills demonstrations and clinics*
Management Controls:	*No visitor controls apparent. No use limits. Enforcement presence very rare.*		*Signs at key access points on basic user ethics. May have back country use restrictions. Enforcement presence rare*	*Occasional regulatory signing. Motorized and mechanized use restrictions. Random enforcement presence*	*Rules clearly posted with some seasonal or day-of-week use restrictions. Periodic enforcement presence*	*Regulations prominent. Total use limited y permit, reservation, etc. Routine enforcement presence.*	*Continuous enforcement to redistribute use and reduce user conflicts, hazards, and resource damage*
Domestic Animals:	*Domestic animals neither present nor allowed*	*No domestic animals except for working dogs or pack stock*	*Non-working as well as working domestic animals (e.g., sheep dogs, sled dogs, etc.) under owner's voice/whistle control*	*Leash-free area for dogs, and pack stock may be packed, ridden or tethered anywhere*	*Within recreation areas, all dogs on leash, and separate areas provided for pack stock; all animals controlled elsewhere*	*Domestic animals prohibited at recreation sites and other high-use areas; all animals controlled elsewhere*	*Domestic animals seemingly everywhere present, but subject to at least some kind of controls or restrictions (e.g., horse diapers)*
Individual User Fees:	*No individual user fees*		*Individual user fees charged within certain back country areas*	*Additional fees charged individuals at some developed recreation sites, but not for any dispersed recreation use*	*Individual user fees charged at all developed sites, but not yet for any dispersed recreation use*	*Individual user fees charged at all developed sites and for dispersed use within high-use areas only*	*Individual user fees charged for all recreation use*
*** Mechanized Use (any):**	*None whatsoever*		*Mountain bikes and perhaps other mechanized use, but all is non-motorized*	*Four-wheel drives, all-terrain vehicles, dirt bikes, or snowmobiles in addition to non-motorized, mechanized use*	*Two-wheel drive vehicles predominant, but also four wheel drives and non-motorized, mechanized use*	*Ordinary highway auto and truck traffic is characteristic*	*Wide variety of street vehicles and highway traffic is ever-present*