Integrated Management Plan for the California Park Special Interest Area

Last Update: September 30, 2003

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Introduction

California and Slater Parks are large, high-mountain parks located in the northwest portion of the Routt National Forest, approximately 25 miles North of Hayden, Colorado. The Forest Service designated the California Park and Slater Park areas as a Special Interest Management Prescription Area in the 1997 Routt National Forest Land and Resource Management Plan (USDA Forest Service 1998a). The 1997 Forest Plan designated Special Interest Area's (SIA) because of the important characteristics of particular areas on the National Forest. SIA's were designated because of special biological, geological, scenic and historical values. Several SIA's, such as the Windy Ridge SIA, were designated primarily because of important archaeological sites located in the area. The California Park SIA (CPSIA) was designated primarily because of the important biological diversity of the area.

The 27,877 acre California Park Special Interest Area (CPSIA) received this designation as a result of the areas geological, historical, scenic, and zoological values including the high diversity of threatened, endangered, and sensitive plant and animal species present in the area (USDA Forest Service 1998b). This emphasis on the biological values of the CPSIA is clarified in the Final Environmental Impact Statement of the Forest Plan and was further refined through the development of this management plan in partnership with the California Park Working Group and the Forest Service Interdisciplinary Team.

The Forest Plan direction for this management area states, "**Management Implementation Guidelines will be developed for each SIA to ensure protection of the values for which the area was identified**". Since many of the values for which this area was identified may conflict with existing land uses, it was determined that the development of an Integrated Management Plan would best facilitate the development of the Management Implementation Guidelines and allow for an ecosystem based management approach to addressing the many Special Interest Area values in the area, while striving to meet the multiple use goals for the Forest. The California Park SIA will be managed to protect and enhance the special interest values for which the area was identified.

The California Park Working Group (CPWG) was initiated in response to the need for the development of an integrated management plan to protect the values of the Special Interest Area. The first meeting of the CPWG was held on July 13 1999. The working group is open to the public and has involved Forest Service personnel and individuals from the Colorado Division of Wildlife, Colorado Natural Areas Program, Trout Unlimited, Rocky Mountain Elk Foundation, Native Plant Society, Colorado Natural Heritage Program, Meeker Plant Center, private landowners, Forest range permittees and interested members of the public. The working group met approximately every month from July 1999 to December 2000. The initial process focused on the clarification of the Special Interest Area values. The working group then developed a mission statement and identified the desired future condition.

The subsequent tasks of the working group involved the discussion of each of the individual special interest area values and the identification of the specific existing condition, desired future condition, as well as possible management actions that could move that value towards it's specific desired condition.

The development of this management plan has been complex process, as the factors limiting or impacting some of the special interest area values are interconnected with larger problems. One example of this relates to the vegetation condition in the park. Early on, elk were identified as significantly contributing to the vegetation impacts in the area. Since one goal of the plan was to

explore how to maintain livestock grazing without impacting the sensitive species in the area, it was determined that elk numbers must be reduced to alleviate vegetative impacts and allow for creatively managed domestic grazers to use the area without impacting the values of the area. This lead to proposals that influenced travel managements and two subsequent roads analysis projects complete with extensive public scoping were initiated and completed for both the Elkhead Mountain and Slater Creek Geographic Areas. Exploring the interconnected problems in a working group setting to the many individual and integrated goals of the Special Interest Area has been an important aspect of developing this plan.

Achieving and maintaining the Desired Future Condition of the CPSIA will require a continued focused effort by the Forest Service and members of the California Park Working Group. This integrated management plan will serve as a guide, by establishing management implementation guidelines and proposed actions, for moving from the existing condition to the Desired Future Condition (DFC). As management actions are implemented and monitored, and as new information is collected, adaptive management will be used to ensure that desired conditions are within the capability of the land. Through the project specific implementation of management actions designed to move the CPSIA towards the DFC, follow-up project monitoring and continued annual meetings of the CPWG and Forest Service interdisciplinary team, this management plan will continue to be updated as needed.

This management plan is not a decision document but rather it is a planning document. This plan was developed to provide additional specific guidance in the CPSIA to ensure that the Special Interest Area values are appropriately managed and protected. The implementation of specific management actions will require appropriate analysis as required by the National Environmental Policy Act (NEPA), appropriate public scoping and a decision document prior to implementation.

California Park Special Interest Area Values

Biological Values

- **Greater Sage-grouse and Columbian Sharp-tailed Grouse**
- **Greater Sandhill Crane**
- **Boreal Toad**
- **Colorado River Cutthroat Trout**
- **Slater Park Macro Preliminary Conservation Planning Area**
- **Limber Pine**

Geological Values

- **Sulphur Springs**
- **Land Forms and Soils**
- **Paleontological Resources**

Historical Values

- **Prehistoric Archaeological Values**
- **Homesteads and Cabins**
- **Historic Stock Driveways and Domestic Livestock Grazing**

Scenic Values

- **Unusual High Elevation Shrub-steppe Park**
- **Aspen Forests**

Note: Detailed descriptions of Special Interest Area values begin on page 34.

Figure 1. Routt National Forest California Park Special Interest Area Vicinity Map

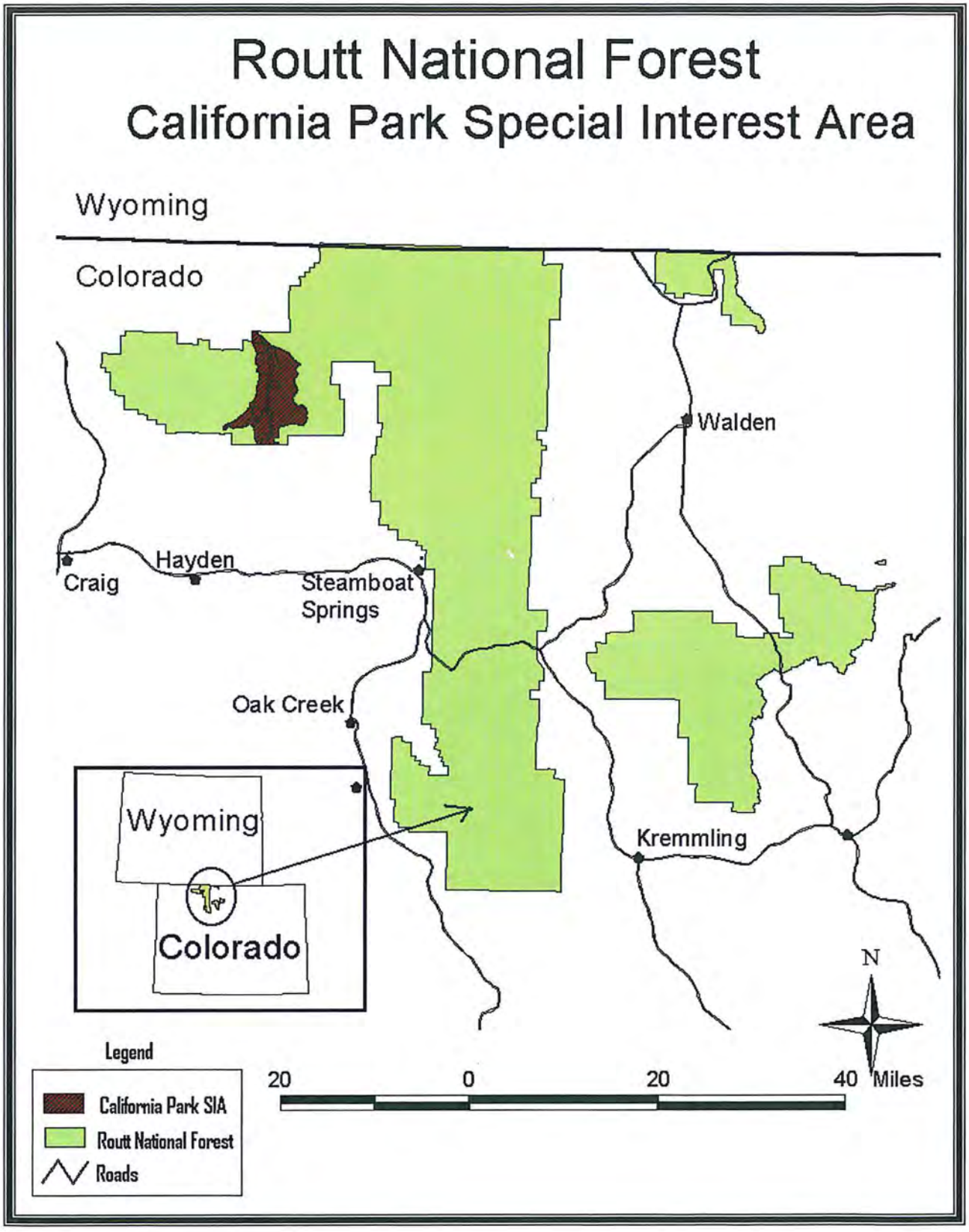
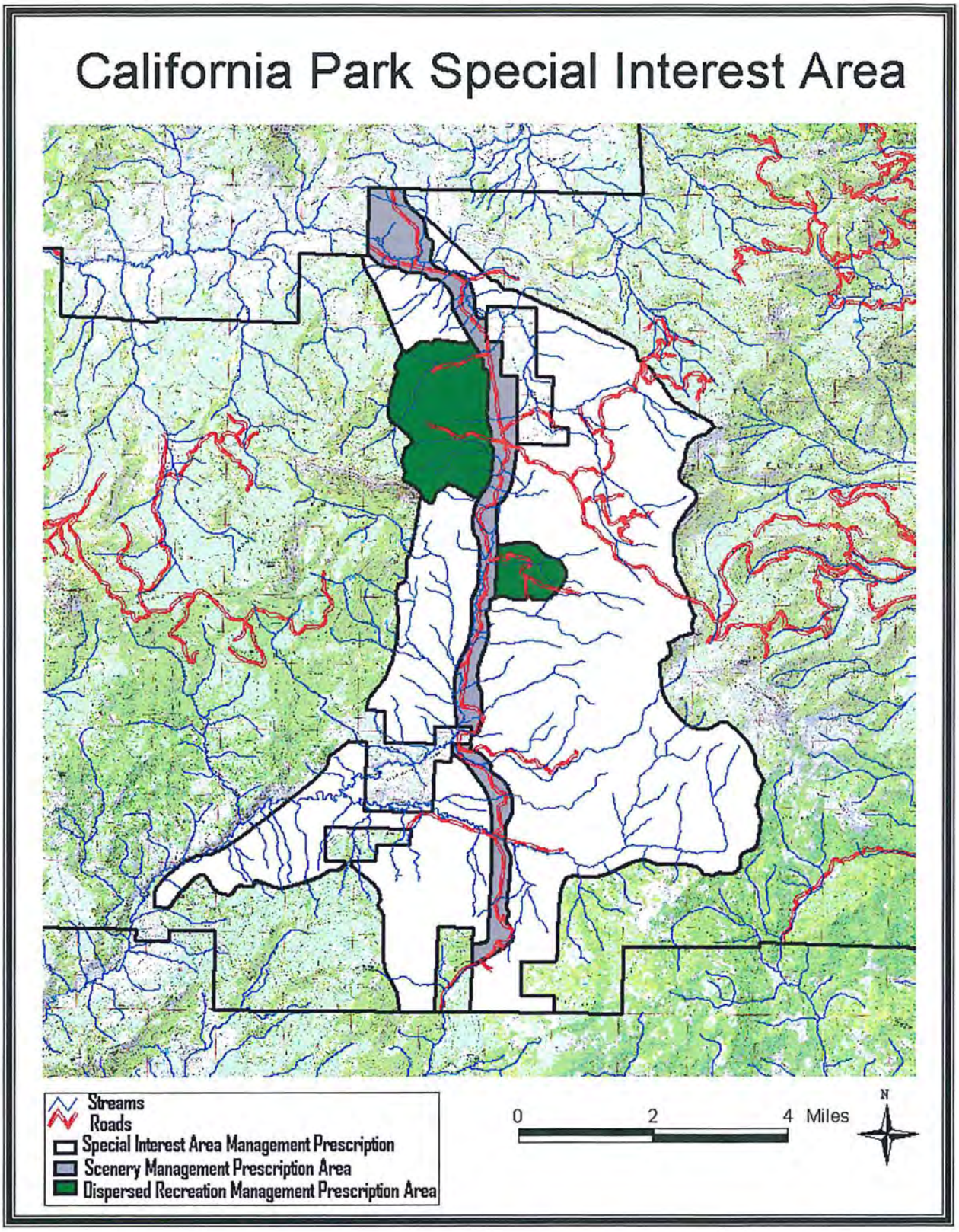


Figure 2. California Park Special Interest Area



Mission Statement

Within the California Park Special Interest Area, restore and maintain a healthy and properly functioning ecosystem, using an integrated approach to emphasize biodiversity conservation and compatibility with the values designated for the Special Interest Area.

Desired Future Condition

The physical, chemical, and biological values and integrity for which the CPSIA was identified would be protected and maintained. Habitats would be managed and restored to quality native communities. Habitat conditions would be suitable for maintaining and increasing viable populations of Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*), greater sage-grouse (*Centrocercus urophasianus*), greater sandhill cranes (*Grus canadensis tabida*), boreal toads (*Bufo boreas boreas*), and Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*). Plant communities in the CPSIA would contain a diversity and high density of desirable vegetation including deciduous and non-deciduous shrubs, grasses, and forbs that are native to the particular plant community. The forage quality would be of high value. Invasive and noxious plant species would be managed to protect and enhance the quality and diversity of desirable native plant communities. The open parklands within the SIA would have a 15-35% sagebrush canopy maintained in a mosaic, interspersed with bunchgrasses and forbs native to the sagebrush type. The potential and quality of streams and riparian areas in the CPSIA are limited because of the nature of local geology and soils; however, these areas would be maintained and restored to a properly functioning status within these natural constraints. Stream banks would be stable with sediment and water loading in balance. Riparian vegetation would be dominated by vigorous perennial vegetation of desirable species. The Elkhead watershed would have channels that would be narrower and deeper than found in 1999. In some locations, primarily lower Elkhead, Slater and First Creeks, measures would be taken to reduce the impacts of grazing by both wildlife and livestock. Large herbivores (elk, deer, moose, cattle and sheep) would not negatively impact any of the SIA values or habitats.

Vegetation, terrestrial and aquatic habitats, soil productivity, and water quality would appear natural. Natural processes such as fire and insect and disease outbreaks would generally be allowed to influence forest vegetation where compatible with the SIA values. Vegetation manipulation would only be used to maintain or restore natural conditions, to protect threatened, endangered, and sensitive species, or to protect other values for which the SIA was identified. Rangeland and riparian communities would occur in a mix of seral stages, but predominantly in upper mid-seral to late-seral stages of development.

Attractive and unique features of the CPSIA would be unaltered, providing for an increased opportunity for interpretation and education about historical, cultural, biological, and physical resources of the area. There would be opportunities for interpretation and education emphasizing the protection and conservation of threatened, endangered and sensitive species, sensitive habitats, and overall biological diversity within the CPSIA. Recreational management would focus on interpretation, education, inspirational activities, and protection of CPSIA values. Facilities would be present to the extent needed to maintain the area or facilitate visitor use of the area. Where appropriate, management emphasis may include developing and interpreting areas of unusual characteristics for public education and recreation. All cultural and paleontological resources in the CPSIA would be identified, recorded, evaluated for significance, and assessed for effects.

Forest Plan Consistency Review

The California Park Special Interest Area is located within both the Elkhead Mountain and Slater Creek Geographic Areas as designated in the 1997 Land and Resource Management Plan for the Routt National Forest (Forest Plan). The Forest Plan establishes general goals and desired future conditions for the geographic areas and then more specific desired conditions for the management prescription areas. Forest Plan Standard and Guidelines guide management actions and can be general, applying to the entire forest or specific to Geographic and Management Prescription areas. Goals, desired future conditions and Forest Plan Standards and Guidelines for the CPSIA at the Geographic Area level and for the Management Prescription Area are identified in this section.

The Elkhead Mountain Geographic Area
The CPSIA (2.1 prescription area) is 25% of this geographic area and includes 17,730 acres.
Geographic Area Desired Condition

- The geographic area desired condition is to maintain the aspen, spruce/fir, shrub, and grass/forb communities as the dominant cover types. The area will be characterized by large aspen stands. Shrub and shrub-steppe communities will continue to provide habitat for wildlife.
- The areas seen from Forest roads 110 and 150, sites within the CPSIA will have a natural scenic appearance.
- The geographic area will provide year-round motorized and non-motorized recreation opportunities, with the heaviest use in fall and winter.
- A low motorized travelway density will provide access primarily for timber and grazing uses and for dispersed recreation.

The Slater Creek Geographic Area
The CPSIA (2.1 prescription area) is 8% of this geographic area and includes 5,221 acres.
Geographic Area Desired Condition

- The geographic area desired condition is to maintain the spruce/fir, aspen, and lodgepole pine as the dominant cover types.
- The Little Snake River drainage will continue to provide habitat for Colorado River cutthroat trout.
- The geographic area will provide year-round motorized and non-motorized recreation opportunities, with the heaviest use in fall and winter.
- High quality dispersed motorized and non-motorized recreation opportunities will be available year round.
- A low to medium density system of forest roads will provide access primarily for timber and grazing uses and for dispersed recreation across most of the area.

Unique Features of the Slater Creek Geographic Area

- The Slater Park Macro Preliminary Conservation Planning Area.

Forest Plan Standards and Guidelines for Special Interest Areas

General

Standard
1. Protect and manage the biological diversity, geological, historical, paleontological, or other values for which the SIA was identified.

Minerals

Standard
1. Withdraw SIAs from entry for locatable minerals in conformance with Section 204 of Federal Land Policy and Management Act of 1976 (PL 94-579) when withdrawal is necessary to protect the values for which the area was identified.
2. Allow oil and gas leasing with controlled surface-use stipulation, unless further restricted by other conditions in the SIA.

Range

Guideline
1. Allow livestock grazing if it does not conflict with, or negatively impact, the values for which the area was identified.

Vegetation

Standard
1. Use only those vegetation management practices necessary to meet specific resource objectives of maintaining or restoring the values for which the SIA was identified. Timber harvest is not scheduled and does not contribute towards the allowable sale quantity.

Fire and Fuels

Standard
1. Use direct control, perimeter control, or prescription control as the wildland fire management strategy in this Management Area.

Guideline
1. Wildland fire will be allowed to naturally influence vegetative communities, except when incompatible with maintaining and protecting the values for which the SIA was identified. Wildland fire control measures may be used to protect SIA values.

Recreation

Standard
1. Allow recreational use emphasizing interpretation and education when it does not threaten the values for which the area was identified.

Guidelines
1. Manage for an ROS class of semi-primitive nonmotorized, semiprimitive motorized, or roaded natural.
2. Use restrictions or closures available under 36CFR 219, Subpart B, when necessary to protect the area from actual or potential damage due to public use.

Visuals

Guideline
1. Meet the adopted visual quality objective of retention.

Special Uses

Standard
1. Authorize scientific activity or other activities that are compatible with the SIA's values through special-use permits. The permits will have terms that protect or enhance the area.

Transportation

Guidelines
1. Construct new roads only when consistent with SIA values, such as interpretation or education, or to meet other resource objectives that will not negatively impact SIA values.
2. Minimize and mitigate resource damage occurring from existing roads or trails.

History of the California Park Area

Prehistoric Overview

The prehistoric occupation of the Routt National Forest (RNF) appears to have been fairly continuous, if not intensive, from at least 11,000 years before present (B.P.) until historic contact with the Ute and Arapaho.

The earliest evidence of human activity in north-central Colorado comes from the Paleoindian period, commonly defined as lasting from approximately 11,500 to 8,000 years B.P. Paleoindian lifeways are thought to have been largely dependent on big game hunting, especially during the late Pleistocene and early Holocene when megafauna still existed.

The Archaic period spans the time period from approximately 8,000 to 2,000 or 1500 B.P. Archaic lifeways are poorly understood, but are believed to have been highly adapted to the environmental conditions of a particular region. Hunting and gathering remained the exclusive method of subsistence.

The Late Prehistoric period witnessed the introduction of the bow and arrow into hunting tool kits, as well as the limited use of ceramic vessels, into the mountains of northern Colorado. Many desert side-notched ("Ute") arrow points, as well as Plains-style arrow points, have been located on the RNF. Ceramic sherds are not common, but a few sherds of utility ware have been found on the forest.

The Ute occupied the RNF for at least 300 to 400 years, and may have migrated to this area as early as A.D. 1300, based on linguistic evidence (Miller 1986). The Arapaho, Shoshone, Cheyenne, and possibly Kiowa, utilized the mountains of this area to a lesser extent until the 1700s. After 1810, the Ute and Arapaho competed over hunting territory (Hughes 1977:36). In 1879 the White River, Yampatika, and other Ute bands were forcibly removed from their traditional lands and placed on the Northern Ute Reservation in Utah.

American Indian use of California Park is evident in the archaeological sites already identified in the area. In addition, Ute traditional tribal knowledge identifies California Park as a location for gathering native edible plants.

Historic Overview

Historical themes in the California Park region include the fur trade, early exploration, homesteading, commercial timber operations, mining, grazing, and recreation and tourism (Mehls 1984).

Trapping

For the mountains of north-central Colorado, the historic period begins in the early to mid-1800s, when Euroamerican explorers first began to venture into the area. Unfortunately, most of the earliest Euroamericans in the area were explorers and trappers who left little trace of their visits. Because of the demand for pelts in the early 1800s, several men explored the country around the Green and Yampa River valleys for beaver and game. By the mid-1800s the beaver and big game population had been severely impacted by the trapping industry. The paucity of resources, in addition to a decreased European demand for imported fur, caused the fur trade to decline, and in 1844 Fort Crockett in Utah was abandoned. A few trappers, however, clung to their way of life in northwestern Colorado as late as 1878. Ben Lackey was an early trapper in the area and the one to give California Park its name.

Early Exploration

Exploration and mapping for the U.S. government, in connection with the Louisiana Purchase, or simply for adventure, brought a wider range of people to the west. Although the region was opened for exploration after the Louisiana Purchase of 1803, many of the earliest explorers in northwestern Colorado did not arrive until the early 1830s.

The discovery of gold in 1859 near Denver brought flocks of Easterners to the state. This, in turn, brought more intense exploration of the parks and valleys surrounding what is now the RNF. In 1871, Dr. Ferdinand V. Hayden was hired by the United States Geological Survey (USGS) to provide detailed descriptions of the geology, topography, flora and fauna of Middle Park. Some of Hayden's maps provide important information about place names in the area circa 1877. Hayden's party concluded that North Park, the Yampa Valley, Egeria Park and the Little Snake River Valley all had agricultural potential.

Settlement

Settlement in the area occurred in the late 1800s to the early 1900s. Most of the first settlers were trappers, followed by homesteaders and ranchers. Edward House's ranch is shown on the 1882 General Land Office plat just south of Elk Head Creek and another unnamed ranch is nearby. Historic maps depict many unnamed cabins and ranches in the park during the late 1800s and early 1900s.

A Mr. Adams was a hide hunter operating in Slater Park in 1886. Settlers lynched him and his German partner because of their devastating hunting practices. Herbert Jones was a homesteader in 1910. He opened a small country store and operated the Elk Head Post Office south of California Park. Mr. Jokodowski was a bachelor-homesteader that wintered in California Park in 1907. Neighbors remember him communicating across the park with flashing lanterns though by 1917 telephone lines were in the area. The remains of his cabin burned down several years ago.

Another homesteader in the area was Ed Knowles. His cabin still remains south of the California Park Guard Station. Brothers Dan, Chris, and Ira Stukey operated several sawmills and gold mines in the county and Stukey Creek was named after them.

Early homesteaders are reported to have grown hay (timothy) in the California Park Area.

Mining

The discovery of gold at Hahns Peak brought miners to Routt County as early as the 1860s. Unlike Hahns Peak and other areas in the general region, California Park was of limited interest to early miners exploring for precious metals. Instead, coal deposits were more heavily explored. Anthracite Ridge contains high grade coal versus the lower grade bituminous coal deposits found further west. Bob Perry opened a mine in 1925 for the development of anthracite coal. The mine was only in operation for three years employing ten people before it had to close, largely because of transportation problems. On the east side of Pilot Knob, the Block Mine was started in 1902 by Fred May and Thomas R. Ducey. The mine was in operation until the 1940s producing a cubed half anthracite and half bituminous coal extraction.

Recreation

Recreational use has a long history in the California Park area. Theodore Roosevelt frequented the area during the 1890s as part of his many hunting expeditions. He popularized the 28,000 acres as a famed hunting spot during that era.

National Forest

President Theodore Roosevelt designated the Park Range Forest Preserve in 1905, three years later he changed the name to the Routt National Forest. Right from the beginning the Forest Rangers had to manage hunting, ranching, logging, mining, and farming in California Park. A guard station was built south of First Creek to house the rangers working so far from the towns. This guard station is marked on 1919 and 1921 maps. By 1932, the old California Park Guard Station was no longer on the map but a new one is shown a few miles north of the old site. The later site is marked on the 1932 Forest map and subsequent maps, indicating that the location of the guard station was moved between 1921 and 1932.

Grazing

Livestock ranching proved to be the most important long-term economic activity in the north-central portion of Colorado. Although the imminent failure of the mines prompted many early settlers to begin raising livestock, it was some time before crops and methods suitable to the basins and high alpine meadows of northern Colorado were developed (Mehls 1984a). The short growing season and variable precipitation patterns of the region dictated that the most successful agricultural product was hay--not only for cattle, but also for the horses and mules utilized in the region's mining camps.

Once the Union Pacific opened lines in southern Wyoming, cowboys were able to ship cattle westward to untouched grazing lands. Soon after, ranchers moved herds to the Little Snake, Yampa, and White River valleys, as well as into North Park. During the heyday of ranching in the 1880s, 1890s, and early 1900s, the ranges were open and ranchers followed a pattern of seasonal land use, letting their herds roam free in the high mountain valleys and meadows during the summer and bringing them back to lower elevations during the winter (Athearn 1982).

The initial success of beef producers in north-central Colorado was tempered by several important factors. Cattle ranchers feared the introduction of sheep in the early 1900s, because of the inevitable competition for grazing lands. Sheep were already in southern Colorado and the San Luis Valley in the 1860s, but it was not until 1890 or 1891 that the first sheep came into northwestern Colorado, driven by sheep rancher Johnny Wilkes from Wyoming.

Additional pressure was put on the sheep and cattle industries after the establishment of the National Forests in 1905. Much of the land that previously had been grazed was withdrawn as timber reserve land and, in addition, herders and ranchers were required to apply for grazing permits. The permits decreased the unregulated grazing, but still allow substantial grazing numbers. In 1907, Wyoming sheep were allowed to graze on the RNF. Up until 1925, eighty percent of the sheep on the Routt were from Wyoming because there were no resident sheepmen in northwestern Colorado.

The California Park and Slater Park basins were used for summer grazing thousands of cattle by many of the large cattle outfits. California Park served as a round up area. The Beef Trail was started around 1870 and thousands of cattle were trailed from the Little Snake River Valley through Slater Park, California Park, Steamboat Springs, Yampa, and Toponas, all the way to Wolcott for shipping every

year. Livestock grazing use was unregulated until the Forest Service began issuing permits in 1905. In 1917, the first sheep were grazed in California Park and the 1921 General Land Office plat shows the Bears Ears and Sand Mountain Sheep Trail, and the Hahns Peak and Slater Park Trail crossing the park. Sheep were first officially permitted on National Forest around California Park in 1923. Ultimately, the Forest Service realized that its lands were inundated with livestock and in the 1920s began to seriously monitor the effects of grazing on the land.

The earliest records of permitted use date from the mid to late 1920s. Eight allotments were originally designated within the area now part of the California Park SIA. Management of the permits since 1923 has decreased the allotments to 7 and has substantially reduced stocking numbers of cattle and slightly reduced numbers of permitted sheep.

Summary of Historic Permitted Livestock Use

California Park Unit

Year	Stocking Rate	Season
1925	1200 c/c	6/1 – 10/31
1926-27	2600 c/c	7/1 – 9/30
1928-32	1200 c/c	7/1 – 9/30
1933-39	450 c/c	7/1 – 9/30
1940-42	385 c/c	7/11 – 9/30
1943-45	385 c/c	7/1 – 9/20
1946-48	385 c/c	7/6 – 9/25
1949	256 c/c	7/6 – 9/25
1950-66	125 c/c	7/6 – 9/25
1967-89	265 c/c	7/6 – 9/25
1990-present	*400 c/c	7/6 – 9/25

* Additional numbers of livestock permitted attributed to private land that was acquired by the Forest Service in a land exchange.

Stukey Creek Unit

Year	Stocking Rate	Season
1928-38	no records of permitted numbers or season	
1939	1100 e/l	7/1 – 9/30
1940-44	1160 e/l	7/1 – 9/20
1945-46	1160 e/l	7/11 – 9/20
1947-49	1100 e/l	7/11 – 9/20
1950-present	990 e/l	7/11 – 9/20

Saddle Mountain Unit

Year	Stocking Rate	Season
1928-38	no records of permitted numbers or season	
1939	1200 e/l	7/1 – 9/30
1940-69	1200 e/l	7/1 – 9/20
1970-present	1000 e/l	7/1 – 9/20

Meaden Peak Unit

Year	Stocking Rate	Season
1928-39	1250 e/l	7/1 – 9/30
1940-45	1250 e/l	7/1 – 9/20
1946-75	1250 e/l	7/6 – 9/15
1976-78	1100 e/l	7/6 – 9/15
1979-present	1000 e/l	7/6 – 9/15

Sand Mountain Unit

Year	Stocking Rate	Season
1928-38	no records of permitted numbers or season	
1939-44	1170 e/l	7/1 – 9/20
1945-49	1000 e/l	7/1 – 9/15
1950-present	1000 e/l	7/16 – 9/20

East Quaker Unit

Year	Stocking Rate	Season
1928-39	1200 e/l	6/16 – 9/30
1940-47	1200 e/l	6/25 – 9/15
1948-49	1097 e/l	6/26 – 9/15
1950-present	1000 e/l	7/6 – 9/20

Note: actual use rarely on before 7/1

First Creek Unit

Year	Stocking Rate	Season
1928-38	no records of permitted numbers or season	
1939	1170 e/l	7/1 – 9/30
1940-44	1250 e/l	7/1 – 9/20
1945-49	1080 e/l	7/1 – 9/20

NOTE: This unit was combined into Sand Mountain and East Quaker Units in 1950. The total stocking on the allotment complex was reduced by 1 band, formerly permitted on the First Creek Unit.

Armstrong Creek Unit

Year	Stocking Rate	Season
1924-1927	no records of permitted numbers or season	
1928-39	1250 e/l	7/1 – 9/30
1940-42	1250 e/l	7/1 – 9/20
1943-44	1250 e/l	7/6 – 9/15
1945	1250 e/l	7/6 – 9/20
1946	1250 e/l	7/1 – 9/5
1947-present	1250 e/l	7/6 – 9/20

History of Vegetation Treatments

Manipulation of the rangelands began in 1940 in California Park for the purpose of decreasing shrub cover and increasing palatable grass forage for livestock. These manipulations consisted primarily of reseeding and herbicidal spraying, and were continued until the late 1980's. Most of the projects focused on reducing mulesear (*Wyethia amplexicaulus*) and sagebrush (*Artemisia tridentata and A. cana*) to increase the grass component and forage quality for livestock. A summary of the projects follows:

Year	Acres	Project
1940	115	Reseeding
1951	100	Proposal to reseed with smooth brome, timothy, and intermediate wheatgrass.; in Sec.22, T.9N., R.87W., south of First Creek.
1952	245	Sprayed with 2,4,5-T primarily to reduce wyethia, but also killed big and silver sagebrush in California Park.
1953	333	Sprayed with 2,4,5-T; in California Park.
1954	550	Sprayed with 2,4,5-T in California Park; mostly in Cal Park Unit, but some acres in Meaden Peak and Saddle Mtn Units, with a few acres in Armstrong Creek, East Quaker, and Stukey Creek Units.
1957	285	Aerial sprayed with 2,4-D primarily for wyethia and sagebrush; in First Creek vicinity.
	112	Aerial sprayed with 2,4-D primarily for wyethia, sagebrush, and snowberry; in Stukey Creek vicinity.
	694	Aerial sprayed with 2,4-D primarily for sagebrush, and a little wyethia; in Jokodowski Mesa vicinity.
	368	Aerial sprayed with 2,4-D primarily for wyethia; in Saddle Mountain vicinity.
1962	1320	Aerial sprayed with 2,4-D primarily for wyethia and sagebrush.
1963	1152	Aerial sprayed with 2,4-D primarily for wyethia and sagebrush.
1964	1405	Aerial sprayed with 2,4-D primarily for wyethia and sagebrush.
1981	40	Mechanical treatment (mowing, flailing, ripping, reseeding, fertilizing) of wyethia; E. Armstrong Crk
1982	884	Aerial sprayed with 2,4-D primarily wyethia
1987	175	Ground sprayed with 2,4-D primarily wyethia

See Appendix H for a description of recent vegetation management projects.

Repeat Photography of Historic Photo Points

First Creek - 1907

First Creek – 1998

In the 91 years that passed between the taking of these two photographs several changes in vegetation can be observed. Willow density has decreased resulting in higher stream velocities and stream widening. Sagebrush cover has decreased as well. The aspen clone in the upper right portion of the 1998 photograph has expanded to some degree. The 1998 photograph was taken by Allan C. Jones

Elkhead Range Exclosure 1951

Elkhead Range Exclosure 1998

The most striking change that has occurred in this rangeland exclosure over the 47 years between the two photographs is the decline of upland bunch grasses (Thurber fescue). The 1998 photograph was taken by Allan C. Jones.

Existing Condition

Rangeland Vegetation

Historically, in the late 1800's and early 1900's, sheep and cattle grazed the California Park area intensively. A major stock driveway known as the Beef Trail was used to move livestock between Wyoming and the Yampa Valley by way of California Park. Livestock numbering in the tens of thousands utilized this travel way with some the stock remaining in California Park for the summer.

In the early 1900's several homesteads were established in the park. With these homesteads came attempts to manipulate the existing vegetation. Forage crops such as timothy were planted and sagebrush was cleared. This and later attempts by the Forest Service to treat Wyethia amplexicaulis (mules ear) with herbicide has removed some of the native vegetation. An increase of non-natives like smooth brome and timothy is evident in the park along with less desirable natives like tarweed and Wyethia.

The current grazing activity (elk, cattle and sheep) is in the process of being analyzed to determine the impacts to vegetation in riparian and upland sites. There are currently six sheep allotments and two cattle allotments, all or portions of which are contained within the CPSIA. The California Park cattle allotment is permitted for 400 cows with calves; the Stewardship allotment is permitted for 350 cows with calves. The sheep allotments are permitted for 1000 ewes with lambs. Livestock enter the allotments during the first week of July and leave by the end of September.

The combination of elk use in May and June followed by sheep and cattle has impacted some areas of riparian and upland vegetation. Monitoring done during the summer of 2003 revealed that browsing on willows is prevalent along First Creek and Elkhead Creek below CR 150. The majority of this use is not occurring during the summer but during the fall and spring and can likely be attributed to elk. Increased sedimentation, bank trampling, stream widening and decreased riparian plant vigor are occurring in some areas. This can be attributed to several factors. The soils in California Park are highly erosive and soil movement and erosion are common in both riparian and upland areas. Cracking and sloughing of upland soils can be readily seen. Beaver activity in First Creek and Elkhead Creek is extensive and dams are numerous. Each spring the run-off washes many of the dams out scouring the drainage and leaving cut banks and areas of bare soil. Bank trampling from elk, cattle, and sheep compounds the problem of establishing vegetation on the banks. These impacts can deteriorate habitats for Colorado River cutthroat trout, boreal toads, northern leopard frogs, Columbian sharp-tailed grouse and sandhill cranes.

Upland sites consist of two main vegetation types; sagebrush/bunchgrass plant communities and aspen/forb communities. These areas provide forage and cover for wildlife and forage for livestock. Monitoring conducted during the summer of 2003 showed some areas of heavy use in both of these vegetation types. Areas of primarily south facing slopes where snow melts earlier had numerous elk pellets and heavy use on vegetation. Later in the season domestic livestock may continue to graze these same areas. Sheep and cattle use overlaps in some areas of the park. There are no fences to separate the different allotments. Although this is beneficial from an aesthetic standpoint, it can result in over utilization of forage when animals stray outside the boundaries of one allotment into another. It is likely that overuse by livestock and elk in some areas has contributed to decreases in desirable forbs and aspen regeneration. Similarly, overuse in the sagebrush communities can be detrimental to Columbian sharp-

tailed grouse habitat.

An environmental assessment is scheduled to address the impacts of grazing by wildlife and livestock. This document will address alternatives to management of grazing in California to move vegetation towards desired condition and protect the Special Interest Area values.

Most of the aspen is typed as aspen/tall forb (after Mueggler 1988) since no one or two species dominate an entire stand. Instead, 6-8 species are common throughout, shifting in relative abundance across the area in a mosaic pattern. Although most of the aspen stands were lumped under this type, the palatable tall forbs are rarely abundant. Horsemint, groundsel, meadowrue, granium, thermopsis, wildrye, and brome frequently dominate the understory, while ligusticum, cow parsnip, and sweet anise are rarely abundant. These observations are in marked contrast to the paced transects done on the allotments in the past, when ligusticum, cow parsnip, and sweet anise comprised 20-30 (and sometimes 40) hits per transect. Most of the aspen not typed as aspen/tall forb is the aspen/bracken fern type. Where bracken fern occurs it dominates all other understory species; however, these patches are small.

Aspen stands in the area have the potential to be either relatively stable or in a successional stage to climax as conifer stands (Mueggler, 1988). It appears that both situations are occurring in the area. In the successional aspen stands, as conifer cover increases, herbaceous and shrub cover often decreases. This becomes most pronounced when the conifer overstory is 15% or more of the overstory basal area (Meuggler, 1988).

Although the aspen understory is changed, percent ground cover is good. The open parks, on the other hand, have a high percentage of bare ground. This occurs at all elevations, but is especially prevalent in slumpy areas and old burns at the higher elevations. Almost every allotment has areas of significant trailing.

Shrub-steppe shrub species such as sagebrush, snowberry, and rabbitbrush are still in overall abundance in the parklands. However, these shrubs are lacking or nonexistent in some areas that were heavily sprayed historically, but appear to be returning naturally. Upland shrub species like chokecherry, serviceberry, maple, and oak are rarely encountered. When seen, these plants are old, decadent, and severely hedged.

In the riparian areas, willows are few and the dominant herbaceous vegetation is sedge rostrata and bluejoint reedgrass. Few, if any, forbs are noted in riparian areas. The only exception is Canada thistle which is prevalent in both riparian and upland sites. Willow species include booth, drummond, whiplash, scouler and geyer. Alder is found at higher elevations.

Data from existing and historic vegetation monitoring transects are on file in the Rangeland Management Department of the Steamboat Springs Forest Service Office.

Allotment Inspection Notes:

Allotment inspections were conducted in 1996 by Forest Service range personnel to verify and/or correct vegetation typing made or revised in the late 1950s and early 1960s. The 6 sheep allotments (Saddle Mountain, Meaden Peak, Armstrong Creek, Sand Mountain, East Quaker, and Stukey Creek) were

inspected. The California Park cattle allotment was not inspected. The new type maps are based on community types (existing vegetation) rather than habitat types (potential vegetation).
In general, community types observed in 1996 did not correlate well with the old type maps; little similarity was noted between existing conditions and the types designated by the old maps. Comparison between historical data and existing conditions indicates a shift in aspen understory from highly palatable forbs (ligusticum, sweet anise, and cow parsnip) to forbs of lower palatability (coneflower, horsemint, meadowrue, groundsel), and to grasses such as wildrye, brome, timothy, and needlegrass. Aspen regeneration was also found to be uncommon.

Elk were seen on every allotment evaluated, and the inspections indicate that elk populations are rising throughout the area. On some of the allotments the grazing pressure from elk in early summer is so great that they have left little forage for use by sheep later in the summer. Although there are no quantitative measurements of the amount of grazing that occurs from elk, elk are contributing significant grazing pressure to many of the units in the California Park Allotment Complex.

Saddle Mountain Unit

Many elk were observed during inspection of this allotment. Initially all evidence of grazing was thought to be sheep-related, but it was later thought that much of it could have been due to elk, especially in the area west of Circle Creek. Streams on the allotment were mostly dry. The area north of Saddle Mountain had much more cow parsnip, ligusticum, and sweet anise than the aspen range to the south, and the old typing of sweet anise/brome or ligusticum/meadowrue could be considered valid. It did not appear that sheep graze the top of Saddle Mountain, especially the western side. The area was not inspected to verify the typing, but the difficulty of accessing the area through the dense spruce-fir leads one to believe the sheep do not go there. It may be used by a band to the west, however; past inspection notes make reference to trespass there. Circle Creek and the surrounding area in Section 34 is in poor condition. Bare ground, tarweed (*Madia glomerata*), and mulesear are prevalent. Part of this is due to slumping from the northeast. This slumpy area is typed as mulesear/tarweed on the map. Areas of Elkhead Creek throughout the allotment exhibit unstable banks.

Meaden Peak Unit

The large pond in Section 26 has decadent and hedged chokecherry *(Prunus virginiana*) and serviceberry (*Amelancheir alnifolia*) bushes on the slopes surrounding it. Trailing is evident at this pond. The only other place those shrubs are noted is in the SENW Section 2, north of Knowles Creek. Again, the willows are hedged and decadent. Booth, drummond, and whiplash willow (*Salix spp.*) were found at the lower elevations and were replaced by alder at higher elevations. Coneflower is uncommon in this allotment, and the grass component is higher here than on Saddle Mountain or Stukey Creek Allotments. A small park in the SWNE of Section 1 has oatgrass spp. and Thurber fescue in the drier parts; this is the only place on the allotment these species were seen. Tall, palatable forbs are less prevalent than on Saddle Mountain Unit. Cow parsnip and ligusticum were seen only in one area, just north and east of the California Park Guard Station. Sweet anise was also noted between Torso and Knowles Creek in the western part of Section 2.

Armstrong Creek Unit

The aspen north of Armstrong Creek are becoming encroached with conifer. Although the

forage base in this area is not absent, it is likely that as encroachment continues it will reduce available forage on the allotment. This area is mapped as Potr/Ptaq and Abla-Potr/Tall Forb. The previous inspection showed this area as 10-HER-LIG, which is no longer accurate. An area of significant trailing and erosion was noted in the NENE of Section 13 at Armstrong Creek. Higher elevation parks have poor species composition and significant bare ground. Bare ground, poor species composition, and erosion were prevalent here. This allotment had more bracken fern than Stukey Creek, Saddle Mountain, or Meaden Peak. It was dense in some areas, but also was mixed with other species of the tall forb guild. Although capacity estimates should be reduced on sites mapped as Potr/Ptaq, the area is still utilized by sheep and does have some forage for livestock.

Sand Mountain Unit

This allotment was difficult to access and the topography of the allotment makes sheep movement rather difficult as well. The allotment is dissected by fairly steep stream courses, and First Creek forms a definite barrier between the southern 1/5th of the allotment and the northern portion. Open parks with bare ground and scattered scouler willow were common (Sections 19 and 20, north of First Creek). The grass component on this allotment was higher than on any of the other allotments inspected, although it did not warrant a type change from Potr/Tall Forb. The southwest corner of this allotment is the old Beef Trail used to take cattle out of the park around the turn of the century. There is a road along the southeastern border of the allotment, which was apparently a oil exploration road. This road and the drill pad are sown to crested wheat and are heavily grazed. It appeared to currently be used as a sheep trail, but it is unknown if bands other than the Sand Mountain band use it.

East Quaker Unit

The main road through California Park cuts through the middle of this allotment and it is one of the only sheep allotments in the park which is accessible to motorized vehicles. Many hunters and camps were seen. The southern boundary of the allotment is not fenced. It is the forest boundary and abuts private land. It was unknown if there is an agreement for the sheep to utilize the private land, but they certainly are. The topography is relatively flat with water close to or on the boundary. Conifer encroachment on the eastern half of the allotment has progressed significantly since the last analysis, however a timber sale was in progress in Section 35 at the time of the inspection. Conifer encroachment and the reduction of quality aspen and palatable understory species should continue to be assesed using newly available aerial photos and ground monitoring. Three areas in the allotment still show the effects of past disturbances. One is the timber sale on the western side of the allotment. Old allotment maps indicate this area was closed to grazing. There is no documentation in the folder to indicate when this occurred or if it is still closed to grazing. Regeneration is patchy and the soils here are very mobile here. Most of the old timber sale roads have slipped off the sides of the hills. Canada thistle predominates in the sale area. A second disturbance, believed to be an old fire, is on the eastern boundary of the allotment. This may have been salvage logged as well. Regeneration is coming in, but the area is predominantly grass at this time. The third area is a small opening in the SWNE of Section 35, where iron scraps and old cut logs are present. Although the type of activity was not identified, it was thought that the poor composition (hairy golden aster and timothy) is due to past activity rather than current livestock grazing. The riparian area in Section 34 (northwest of the California Park road) was in poor condition. Canada thistle was abundant, and an area at the headwaters

was trampled and completely bare of vegetation.

Stukey Creek Unit

Due to time limitations, this inspection was limited to the eastern half of the allotment. The only area west of Stukey Creek inspected was the NW 1/4 of Section 6, T9N, R87W.

Aspen stands contain mostly grasses, principally wildrye and varying amounts of timothy and mountain brome. These grassier sites could be typed out as Potr/Elgl or lumped with the Aspen/Tall forb type. Palatable forbs are relatively scarce under aspen stands. Canada thistle is present scattered through many of the aspen stands and is in greater quantity than expected on such a productive site with good ground cover. Present species composition may be the result of heavy selective grazing pressure on those plant species preferred by sheep. Although young subalpine fir trees were seen under some of the aspen stands, in general, the conifer encroachment is not widespread. Most of the openings around the ponds had downed aspen trunks indicating that these once had an aspen overstory. No aspen regeneration was seen in or near mature aspen stands in the allotment.

Willows are scarce on this allotment. Most woody vegetation is alder and occurs along the creeks, but not around most ponds. Most of the willow and alder occur on parts of Sugar and Stukey Creeks, however, the plants are mostly old and decadent and have been heavily hedged. Riparian areas around ponds are dominated primarily by sedges. Canada thistle is also often abundant both in the moist pondside zone and on the slumpy areas around ponds. Most of the slump ponds inspected had little or no use of the wet sedge area, but the dry slopes around them showed signs of heavy grazing and trampling by sheep. There are few riparian forbs and the dry terraces adjacent to the creeks have a good deal of bare ground and poor species composition. Diversity is low, with timothy, tarweed, and thistle dominating most areas. The open shrub parks also have very poor ground cover, dominated mostly by timothy, tarweed, and cinquefoil. Snowberry (*Symphoricarpos spp.*) plants are also heavily hedged.

The riparian areas and much of the aspen is in fair conditon. Ground cover and production are good, but species composition/diversity is poor to fair. Silver sagebrush sites, forb/grass openings around ponds and the terraces and aspen edge areas along Stukey Creek and Sugar Creek are in poor condition. High forage value native forbs and grasses and, to some extent, willows appear to have been greatly reduced in abundance and vigor. In general, most of this allotment is unsuitable for grazing, or suitable at a very low stocking rate.

Of the allotments inspected, East Quaker and Saddle Mountain had the highest amount of palatable tall forbs. The Armstrong Creek and Stukey Creek Allotments appear to be the least suitable for grazing as forage quality has severely declined on these units. The Sand Mountain unit appears to have non-uniform grazing pressure, as some of the terrain makes it difficult to maintain regular sheep movements.

Soil Resource Condition

The information and assessment for the California Park Special Interest Area is based on soil and geologic information and field observation and monitoring. The monitoring includes, soil health

assessment, measuring infiltration, erosion bridges, soil respiration, and riparian surveys that were done in conjunction with the stream surveys.

The landforms in this area are the reflection of the different geology (especially surficial geology). The majority of this area is in the moderate mass movement potential class. The landforms in this area are a direct result of past geologic movement. This gives the appearance of mobile real estate.

The dominant geologic types are landslide deposits, residuum from Lance Formation, and residuum form the Lewis shale. (Note: detail geology maps and soil maps are on file at the Steamboat Springs office of the Forest Service). The Lewis shale is marine shale that support large amount of fossils. The dominant types of movement are rotational slides and earth flows. Earth flows are particularly extensive with the Lewis shale. Land sliding tends to destroy the strength of the material involved, but some can acquire strength. This is depends on the material involved. If the material involved is compose of coarser and fine segment including large fragments of durable rock types, the resulting aggregate may have good strength. If on the other hand the material is mostly fine grained such as siltstone and shale, the resultant material may remain weak. The point of the above discussion is to point out that the California Park has both examples of week and strong landside material. The volcanic geology in the Park provides a source of material that is strong and the shale is at the opposite end.

The soils are mostly fine-loamy to fine textures that have been reworked. The soils have a high erodibility factor meaning that they are sensitive to erosion if there is not enough effective ground cover. No matter what the activity is, the end result is that the Forest plan directs us to maintain effective ground cover.

Historical grazing that was occurring at the turn of the century has impacted the soils in the California Park SIA. The result is that some of this area will not be able to support some of the vegetation communities that occurred prior to the livestock grazing impacts. There has been some restoration work done to break up some of the compacted landscape. In 2001 a winged subsoiler was used, and some of the preliminary results show that the infiltration and respiration are significantly higher than the untreated lands.

Parts of First Creek, Armstrong Creek and Elkhead Creek areas were rated functional at risk from a soil health standpoint. The rating is based on amount of compaction, slow infiltration, and the lack of effective ground cover.

Watershed Condition

Elkhead Creek Watershed

Assessment of the existing condition for the California Park watershed included field observations, Proper Functioning Condition surveys (BLM, 1993), photos, stream mapping, and stream surveys. Stream surveys include permanent and cumulative cross-sections, pebble counts, and longitudinal profiles.

The California Park area lies in the Elkhead Creek sixth level watershed. While none of the streams in the area are listed as impaired on the 303(d) List (CDH, 1998a), First Creek is on the Monitoring and

Evaluation List for potential impairment due to sediment. Monitoring of physical parameters was initiated during the summer of 1998 in accordance with the Colorado Provisional Guidelines for determining sediment impacts (CDH, 1998b).

Streams in the California Park area reflect the geology and soils of the area, the effects of beaver, and management impacts. Bedrock geology consists primarily of volcanic dikes and outcroppings that form the ridgetops and high points. These high points overlay sedimentary layers comprised primarily of interbedded shales and sandstones. Due to the nature of the shales and sandstones, mass movement potential is high in the park resulting in large areas of 'mobile real estate.' The mobile real estate often impinges on stream channels delivering large quantities of sediment to the stream system, and causing continuous adjustment of the channels. Adjustments include lateral migration and/or downcutting. Similar to the effects of mass movement, beaver dams can also cause lateral channel migration, downcutting through sediments deposited in old beaver dams, and affect riparian condition by reducing the shrub component. Beavers can also benefit streams by creating ponds that slow down stream velocities and bank erosion, provide fish habitat, and banks that promote riparian vegetation growth. The effects of past and present beaver activity can be seen in all of the stream systems.

There is speculation that historical grazing practices and vegetative treatments have significantly effected the upland vegetation, increasing bare soil, and resulting in increased water runoff and channel instability. Stream channels develop the width, depth, and gradient necessary to transport the water and sediment supplied by the watershed. Altering the natural hydrologic regime through increased water yield would 'blowout' the stream channels causing channel instability.

Parts of Elkhead Creek, First Creek, Knowles Creek, Jokodowski Creek, and Armstrong Creek were found to be Functional at Risk based on Proper Functioning Condition surveys. The functional at risk ratings were due to a variety of factors including narrowing riparian areas, the effects of mass movements and beaver, and the effects of grazing by both wildlife and livestock. The effects of grazing were most evident in lower Elkhead Creek above the volcanic dike, and lower First Creek.

While lower Elkhead is considered to be functional at risk, there are a few isolated reaches that appear to be on an upward trend. These areas occur where 1) grazing access is limited resulting in a healthy riparian area, or 2) point bars have been able to revegetate resulting in a narrowing of the channel. A narrower channel is more efficient at transporting sediment, and as a result sediment deposition is lower in these reaches.

Greenline surveys on lower First Creek had a rating of 4.81 or poor-moderate. This greenline rating suggests that inadequate riparian vegetation is present to protect the streambanks from erosion during peak flows. The weighted bank erosion hazard index was high, with 85 % of the surveyed reach having high-very high bank erosion potential.

On lower Elkhead Creek, below the confluence with First Creek, the recovering reach continues to decrease width-depth ratios which improves sediment transport. However, the greenline survey had a rating of 1.92 or very poor indicating that riparian vegetation to help stabilize streambanks is low. This is due largely in part to the entrenched nature of this reach. Even though the stream is starting to recover, the elevation of the water table is still too low to support riparian vegetation along the greenline.

The degraded reaches of Elkhead below the surveyed 'recovering reach' still have high to extreme bank erosion hazard over 80% of the reach. This constitutes the majority of lower Elkhead Creek between First Creek and above the volcanic dike.

1999 PFC Status of California Park SIA Elkhead Creek Watershed:

Stream	Reach	Date	Rating	Trend	Miles Surveyed
Elkhead Cr	2	7/2/1999	Functional at Risk	Downward	1.6
	3	8/31/1999	Functional at Risk	Downward	1.4
	4	9/3/1999	Functional at Risk	Not Apparent	1.1
	5	10/28/1999	PFC		0.4
	7	6/30/1999	Functional at Risk	Not Apparent	2.0
	8	6/30/1999	Functional at Risk	Upward	1.5
First Cr	1	9/2/1999	Functional at Risk	Downward	1.9
	2	10/27/1999	Functional at Risk	Downward	2.0
	2a	9/2/1999	PFC		1.2
	3	6/29/1999	Functional at Risk	Not Apparent	1.5
Jokodowski Cr	1	7/1/1999	Functional at Risk	Not Apparent	1.6
	2	10/26/1999	Functional at Risk	Upward	0.7
Second Cr	1	6/29/1999	PFC		1.1
Armstrong Cr	1	10/28/1999	Functional at Risk	Downward	1.2
Knowles Cr	1	9/1/1999	Functional at Risk	Downward	1.3
Sugar Cr	1	10/26/1999	PFC		0.7
Torso Cr	1	9/1/1999	PFC		1.2
Circle Cr	1	7/1/1999	PFC		2.1
				Total Miles Surveyed	24.6

Summary of miles of stream by PFC rating:

- PFC: 6.8 miles
- Functional at risk, upward: 2.1 miles
- Functional at risk, not apparent: 6.2 miles
- Functional at risk, downward: 9.5 miles

Slater Park Watershed

Slater Park lies in the Slater Creek (140500030301) sixth level planning watershed. Slater Creek is a tributary to the Little Snake River. None of the streams in the Slater Park area are listed as impaired on the Colorado 303(d) list (CDH, 2002).

Soils and bedrock geology in Slater Park are similar to California Park, but mass wasting is not as prevalent; beaver are also an integral part of stream dynamics. Slater Creek above NFSR 154 is generally in dynamic equilibrium. Some isolated areas of instability exist, but overall the stream

appears to be in balance with the landscape setting.

Below NFSR 154, Slater Creek does not appear to be in dynamic equilibrium. Using the BLM's Proper Functioning Condition (BLM, 1993), Slater Creek below NFSR 154 was rated functional at risk. The key factors of concern are lack of adequate vegetative cover to dissipate flood flows, high width-depth ratios, and presence of upland species adjacent to the greenline. Greenline surveys (Winward, 2000) in 2002 had a rating of 6.4 indicating that on average, the greenline species present provided moderate protection during flood flows. The bank erosion hazard index surveys indicated 65% of the reach has low erosion hazard potential, while 30% of the reach had very high erosion potential. The remaining five percent of the reach had moderate erosion potential.

A blowout on NFSR 154 in the last five years where the stream cut through a meander and across the roadbed contributed a significant amount of sediment and bedload to the stream system, which is further affecting the dynamic equilibrium in lower Slater Creek. A watershed improvement project was implemented in 2001 to return the stream to its natural meander pattern. This will help to restore stream dynamics, but movement of the sediment delivered to the stream channel from this blowout will be a long-term recovery process. Entrainment calculations indicate that the channel is aggrading below the road blowout. This would be expected given the quantity of sediment delivered to the stream channel.

The desired condition would be to restore dynamic equilibrium and improve riparian conditions in lower Slater Creek. Restoring dynamic equilibrium would include lowering the width-depth ratio, which would help Slater Creek transport the excess sediment and bedload. Key in restoring dynamic equilibrium and lowering the width-depth ratios would be to increase the percent of the greenline with healthy riparian species that have strong rootmasses. Healthy greenline vegetation would also help to reduce the bank erosion hazard index.

PFC data for the Slater Creek watershed is on file (1999 baseline) in the hydrology office of the Steamboat Forest Service office, but not yet summarized into a table such as the one presented in the Elkhead watershed section. This table will be added to this document in a later revision.

Fisheries

The CPSIA is composed of two main watersheds: the Elkhead and Slater creek watersheds. Two species of trout occur in both watersheds: brook trout and Colorado River cutthroat trout (CRCT). Other species of fish known to occur in the CPSIA include: mottled sculpin (*Cottus bairdi*), mountain sucker (*Catastomus platyrhynchus*), speckled dace (*Rhinichthys osculus*) and white sucker (*Catostomus commersoni*). The recreational fishing resource in the CPSIA could be considered moderate to poor, but important to local recreationists as well as out of state fishermen during the hunting season. There are two 'lakes' and numerous beaver ponds in the CPSIA that support fish populations. One lake referred to as 'Quaker lake' has reportedly produced brook trout at over 5 pounds in weight. The second lake is referred to as 'Lost lake' and is a secret of locals. No trout have ever been caught out of Lost lake so don't bother trying to find it. Low summer flows in recent years has resulted in portions of both Elkhead and Slater creeks going dry. Beaver ponds are very important to the trout populations in the CPSIA and provide critical trout habitat in both summer and winter periods.

CRCT have a fairly strong population in Elkhead Creek, the main watershed in the CPSIA, and also

occupy most areas of Slater Creek. The population of CRCT in the Elkhead Creek watershed could be considered a metapopulation[1]. Streams include Elkhead Creek and its tributaries: Armstrong Creek, Circle Creek, First Creek, Jokodowski Creek, Stuckey Creek and Torso Creek. Brook trout are present in the Elkhead Creek and Slater Creek watersheds and are considered a threat to the CRCT populations in both systems. Although recreational fishing can sometimes be detrimental to CRCT populations, the existing level of fishing currently occurring in the CPSIA is not considered a threat to these populations. Cutthroat trout habitat quality varies within the CPSIA. Some areas, primarily upper stream reaches, are in good condition and other areas are in bad condition. Areas that are currently in poor condition are not recovering properly and will need direct management action to reverse the trend. Many of theses reaches are too wide with severe bank erosion. The CPSIA naturally has highly erodible soils, creating the potential for severe erosion when these soils are disturbed. This potential is compounded by many impacts in the CPSIA including roads, trails, campsites near the creeks, high elk numbers, and sheep and cattle grazing. The CPSIA also has a moderate amount of beaver activity. Beavers are important in maintaining riparian areas and high water tables. The lowering of the water table due to down cutting of channels, heavy grazing of riparian vegetation by elk and livestock, and trampling of streambanks by ungulates are resulting in the deterioration of riparian willow communities. This is contributing to an increase in water temperatures and sedimentation of the creeks. Poor habitat quality and brook trout competition are the major factors influencing the CRCT metapopulation in Elkhead Creek. CRCT populations in Slater Creek are experiencing many of the same influences as Elkhead Creek.

Colorado River cutthroat trout genetic purity testing has been done for Armstrong Creek, Circle Creek, Elkhead Creek and First Creek with purity ratings of A- for the populations in these creeks. Torso Creek has a purity rating of B-. Populations in other streams in the Elkhead Creek watershed as well as the streams in the Slater Creek watershed have unknown purity ratings because either they have not been tested or results have not come in yet.

Brook trout have been removed in Armstrong Creek, Circle Creek and Torso Creek since 1997. These efforts have been very successful, especially in Armstrong Creek because brook trout are not present in Armstrong Creek anymore. Circle Creek and Torso Creek still have fairly large numbers of brook trout present. The Torso Creek and Lower Elkhead drainages were stocked as recently as 1993 with brook trout.

Wildlife

The California Park SIA contains the highest known levels of wildlife biodiversity on the Routt National Forest. This area also has the greatest richness of Forest Service Region 2 sensitive species on the Routt National Forest. This diversity is largely due to the unique presence of the high elevation parks (typical of lower elevational areas) in proximity to aspen, lodgepole pine and spruce-fir forest types. This heterogeneity of vegetation types provides the diversity of habitat requirements that make the California Park SIA a hotspot of biodiversity.

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[1] A metapopulation is a collection of 5 localized populations that are geographically distinct yet are genetically interconnected through natural movement of individual fish among populations as defined in the Conservation Agreement and Strategy for Colorado River Cutthroat Trout (*Oncorhynchus clarki pleuriticus*) in the States of Colorado, Utah and Wyoming, April 2001.

The CPSIA contains all three species of grouse native to northwest Colorado. This includes the Coulmbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*), the greater sage- grouse (*Centrocercus urophasianus*) and the blue grouse (*Dendragapus obscurus*). The CPSIA is the only area of National Forest lands in Colorado where greater sage grouse and Columbian sharp-tailed grouse occur. This makes the SIA a very important destination for upland game bird hunters to typically have poor access to sage and sharptail grouse due to limited access of the primarily private land habitats. The presence of these grouse in the CPSIA is a truly unique feature and important value of the SIA.

The CPSIA is considered the 'stronghold' nesting area for the northwest Colorado population of greater sandhill cranes (*Gurs canadensis tabida*). The CPSIA population contains the highest nesting density of cranes in northwestern Colorado and has proven to be critical in recovering this species from a state endangered status to a state listed species of concern. The CPSIA is estimated to have been used by sandhill cranes for thousands of years as a nesting area and migratory stop. Fully understanding why the greater sandhill crane is considered a special value of the CPSIA is best stated by Aldo Leopold. "Our ability to perceive quality in nature begins, as in art, with the pretty. It expands through successive stages of the beautiful to values yet uncaptured by language. The quality of cranes lies, I think, in this higher gamut, as yet beyond the reach of words." "When we hear his call we hear no mere bird. He is the symbol of our untamable past, of that incredible sweep of millennia which underlies and conditions the daily affairs of birds and men." "And so they live and have their being – these cranes – not in the constricted present, but in the wider reaches of evolutionary time." "The sadness discernible in some marshes arises, perhaps, from their once having harbored cranes. Now they stand humbled, adrift in history."

In addition to upland bird diversity, the CPSIA also has the greatest herpofauna diversity on the Routt National Forest with 4 species of amphibians and 2 species of reptiles. Amphibian species include: boreal toad (*Bufo boreas boreas*), northern leopard frog (*Rana pipiens*), chorus frog (*Pseudacris triseriata*), and the tiger salamander (*Ambystoma tigrinum*). Reptile species include the western terrestrial garter snake (*Thamnophis elegans*) and the smooth green snake (*Opheodrys vernalis*). Of the herpofauna present 4 species are classified as Forest Service region 2 sensitive species: northern leopard frog, tiger salamander, smooth green snake and the boreal toad. The boreal toad is also a state endangered species and a candidate for listing under the Endangered Species Act.

Other unique and sensitive wildlife species include: purple martin (*Progne subis*), long-eared owl (*Asio otus*), northern goshawk (*Accipiter gentilis*), golden eagle (*Aquila chrysaetos*), northern harrier (*Circus cyaneus*) , osprey (*Pandion haliaetus*), American marten (*Martes americiana*), bobcat (*Felis rufus*) and records indicate a wolverine (*Gulo gulo*) was reported in 1980.

Big game species known to inhabit the CPSIA include: elk (*Cervus elaphus*), mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antilocarpa americiana*), black bear (*Ursus americiana*), mountain lion (*Felis concolor*) and occasionally moose (*Alces alces*). California Park is an important elk calving area and it is known for its high concentration of elk throughout the summer and fall. Elk do not winter in the CPSIA, because of snow accumulations. The elk population in the CPSIA is possibly the largest population on the Routt National Forest. The elk population is so large that impacts to vegetation are occurring in upland, riparian and aspen vegetation types. This is proving to be a considerable problem for rangeland management and these impacts are affecting many of the special values unique to the California Park SIA. Reductions in elk numbers are needed to alleviate impacts to sage and sharp-tailed

grouse habitat, sandhill crane habitat, boreal toad habitat, cutthroat trout habitat, aspen regeneration, soils and erosion, and range allotment suitability.

Elk hunting in the CPSIA brings hunters from all over the United States for an opportunity to hunt elk. However, low hunter success has been problematic. One of the main problems resulting in poor hunting success is the increased use of motorized vehicles and the increased access to good elk habitats. This recent increase in hunting pressure has forced the elk to respond by traveling from National Forest Lands onto nearby private lands where they are then inaccessible to public land hunters.

Recently the Routt National Forest has partnered with the Rocky Mountain Elk Foundation, Colorado Division of Wildlife and the Habitat Partnership Program to improve hunter success and satisfaction and thus help reduce the elk herd. The Colorado Division of Wildlife (CDOW) agreed to increase hunting pressure on nearby private lands during the early hunting seasons while also limiting licenses on public lands in the CPSIA during this same time. The Forest Service also placed seasonal closures to motorized vehicles on many critical trails in the area, to attempt to reduce motorized access to elk habitats. An informational brochure outlining the problem, potential solutions, and the solicitation of public comment was also created and distributed. Thousands of copies of the brochure were distributed to hunters using the CPSIA by mail and by informational displays in the CPSIA in 2000, 2001 and 2002. A public meeting was also held in 2000. Two 'roads analyses' were completed for the Elkhead Mountain Geographic Area and for the Slater Creek Geographic Areas (Appendices F and G, respectively). The roads analysis documents were completed to identify and prioritize purposes and needs for roads in the area. These analyses provide a foundation for identifying problems and needs associated with roads and travel management. Identified problems may include impacts to soil, water, or wildlife. It was also necessary to identify roads needed for resource management, public use, and recreational needs. The road analyses are useful in identifying projects that improve land management, protect critical habitats of special value species, and promote improved elk hunter success. The elk management project strives to keep elk on the Forest during the hunting season to improve hunter success and satisfaction while also helping to reduce the elk population in the area and associated impacts to the areas Special Interest Values.

There are currently six sheep allotments and two cattle allotments, all or portions of which are contained within the CPSIA. The California Park cattle allotment is permitted for 400 cows with calves; the Stewardship allotment is permitted for 350 cows with calves. The sheep allotments are permitted for 1000 ewes with lambs. Livestock enter the allotments during the first week of July and leave by the end of September. The current grazing activity (elk, cattle and sheep) is in the process of being analyzed to determine the impacts to vegetation in riparian and upland sites. An environmental assessment for the California Park Allottment Management Plan (AMP) will be completed during the winter of 2003/2004 and will address the specific the impacts of grazing by wildlife and livestock. This AMP will address alternatives to management of grazing in California to move vegetation towards desired condition and protect the Special Interest Area values. When the AMP is completed it will provide more detail on the effects of wild and domestic grazers to the vegetation and sensitive species in the CPSIA. Upon completion, the AMP will be added as an Appendix to this Management Plan.

Many of the impacts form elk, cattle and sheep grazing are a result of cumulative impacts resulting from historic unregulated domestic livestock overgrazing activities coupled with existing wild ungulate (primarily elk) grazing pressure and historic impacts from chemical treatments designed to reduce

sagebrush and wyethia densities. While the current domestic grazing pressure is reduced from historic numbers; the riparian, upland and forested rangelands have been unable to recover from past disturbances with the current approach to domestic grazing and increasing wild ungulate grazing pressure. An innovative approach to managing the grazing allotments in the CPSIA is needed to move the area towards the DFC and protect the Special Interest Area Values.

Considering the extent and intensity of past and current human land uses that have occurred in the CPSIA, it is interesting to question how so many wildlife species, including sensitive and endangered species, continue to occur in the area. With such a history and improved management it is likely that the CPSIA will continue to be a hotspot for sensitive species and biodiversity on the Routt National Forest.

Recreation

The California Park area affords quality dispersed recreation opportunities in a scenic natural setting. The Recreation Opportunity Spectrum (ROS) is primarily 'roaded natural' along the main road corridors of FDR 150 and FDR 42, transitioning to 'semi-primitive' along the perimeter of the area. In addition to the 2.1 Special Interest Area forest plan prescription in California Park, there is a 4.2 Scenery prescription in a narrow corridor along the FDR150, and two 4.3 Dispersed Recreation prescriptions: one in the Adams Creek area, and one in a small pocket around the California Park Guard Station (Figure 2, page 8).

Spring and summer recreation use is currently low. Those individuals who travel a little farther to recreate here, rather than visit more popular areas of the forest closer to population centers, are seeking out the scenery and uncrowded conditions this area provides. Generally low levels of activities such as camping, fishing, hiking, bicycling, horseback riding, ATV and trail motorcycle use, photography, driving for pleasure and viewing scenery occur from July till early-October. Interest in this area by summertime forest visitors is gradually increasing, as the more popular recreation destinations on the forest continue to exhibit increasing use.

Recreational use increases dramatically during the late summer and fall hunting seasons (mid-August through mid-November). During this time period, large numbers of big game hunters drive, camp, operate ATVs, hunt, fish, and ride horses throughout the area.

One of the two trailheads for FDT 1144 lies within the Special Interest Area. There are dozens of dispersed campsites that currently exist along roads and trails that are occupied every year during big game hunting seasons, and new campsites continue to be developed. Off-road and off-trail motorized vehicle violations are common during hunting season, often resulting in resource and vegetative damage.

There are two permitted hunting outfitter/guides operating within or adjacent to the management area. All Seasons Ranch provides guided hunting and two drop camps in the upper First Creek drainage. First Creek Ranch provides game packing services, based from a private inholding south of First Creek, and west of FDR150.

A moderate to high amount of winter use occurs along the groomed snowmobile routes and throughout

the open parks and secondary road corridors. The Northwest Colorado Snowmobile Club is permitted to mark, maintain and groom Forest Development Road (FDR) 150, from the north Forest boundary to the California Park Trailhead and along FDT 1144. FDR 42 is marked, maintained and groomed by the Steamboat Lake Snow Club and Steamboat Lake Outfitters.

The California Park Guard Station is a historic administrative site located in the middle of California Park. There is an ongoing national effort to make Forest Service administrative buildings available for public recreational use to help offset the increasing maintenance costs on these aging buildings. The California Park Guard Station is currently being considered for nightly rentals to the public, along with other guard stations on the district.

Heritage

The RNF cultural distribution maps document cultural assessments for 23 projects between 1987 and 2003 in the California Park Special Interest Area (CPSIA). Approximately ten percent of the CPSIA has been surveyed for cultural resources.

Twenty-two cultural resources have been recorded in California Park, including the California Park Guard Station, Knowles Cabin, California Park Road/Old Beef Trail, California Park – Elkhead Road, Slater Road, Smith Fence, a tent frame, a sawmill, five aspen carving sites, a historic trash scatter, four flaked stone isolated finds, and four flaked stone sites.

In addition, many unrecorded sites are known from historic maps. The 1882 maps show Edward House's Ranch and four unnamed ranches. The 1919, 1921, 1932, 1933, and 1940 maps show additional unrecorded historic sites, such as a sawmill, residences, roads, trails, and ditches. The 1919 GLO and the 1921 Forest map show the old location of the California Park Guard Station. The 1921 map also shows a cabin on Jokowdowski Creek (likely the one that burned down several years ago). Neither has yet been recorded.

Unidentified cultural resources certainly exist in the CPSIA. The cultural resources recorded in California Park have been previously evaluated as not eligible to the National Register of Historic Places. Some of these properties may be re-evaluated as eligible in the future with additional historical information. Cultural resources that are not eligible to the NRHP may still have value to visitors and may be eligible to State or local historic registers.

Paleontological Resources

The CPSIA is predominantly Lewis Shale, but also consists of the Browns Park Formation, the Williams Fork Formation, the Lance Formation, and the Iles Formation. The Williams Fork Formation is considered highly fossiliferous with the potential for significant fossil localities. Vertebrate and invertebrate fossils have been located in the Williams Fork Formation outside the RNF. The Lewis Shale Formation is not highly fossiliferous, but it can still contain significant paleontological remains. Vertebrate and invertebrate fossils have been found in Lewis Shale outside the RNF. The Browns Park Formation is not highly fossiliferous, but at least five fossil localities have been identified, including three south of Maybell containing mammalian fossils.

Special Interest Area Values

Greater Sage Grouse and Columbian Sharp-tailed Grouse

The California Park Special Interest Area contains all three species of grouse native to northwestern Colorado: the Coulmbian sharp-tailed grouse (CSTG, *Tympanuchus phasianellus columbianus*), the greater sage- grouse (*Centrocercus urophasianus*) and the blue grouse (*Dendragapus obscurus*). The CSTG and sage grouse are listed as Region 2 sensitive species and both species have experienced dramatic declines across their historic range. Columbian sharp-tailed grouse were petitioned for listing under the Endangered Species Act, but determined not warranted in October 2000. The California Park SIA contains lek (breeding) sites, and brood-rearing and summering areas for both sage and sharp-tailed grouse. The CPSIA also provides an important dispersal corridor for grouse moving between habitats north and south of the Forest. The CPSIA is one of the only known Forest Lands in Colorado where sharp-tailed and sage grouse occur, and is likely the highest elevation that Columbian sharp-tailed grouse currently occur in their entire distribution.

Native Columbian sharp-tailed grouse and greater sage-grouse spring and summer habitats are often sympatric; therefore the desired conditions for both these species in the CPSIA are similar. Figure 3 depicts summer sage and sharp-tailed grouse breeding habitats. The habitat map was created with the use of a Geographic Information System and habitat model parameters identified by the Colorado Division of Wildlife grouse habitat experts.

Sage Grouse

Sage grouse historically inhabited sagebrush communities in most parts of northwestern Colorado, including the California Park and Slater park vicinities. Sage grouse have declined markedly in recent years in much of the area surrounding the CPSIA (Routt and Moffat Counties). Sage grouse are a sagebrush obligate species, relying year-round on sagebrush for food and cover. The decline and degradation of many sagebrush rangelands across the west have attributed to much of their species' decline. Sage grouse have 5 seasons/ habitats that are physiologically important to them. These include lekking (breeding), nesting, early brood-rearing, late brood-rearing, and winter. Sage grouse do make seasonal movements exceeding 30 miles between summer and winter ranges when required habitats are not immediately available to them. This often occurs at higher elevations or in drier areas.

Sage grouse need patches of contiguous sagebrush approximately 300 acres in size. Vegetation management should emphasize a diverse age structure of sagebrush plants, dominated primarily by medium height plants (40-80 cm), with a 15-35% live canopy cover occurring in a mosaic pattern with small openings that may encourage the formation of new lek sites as populations increase. These stands of sagebrush should have a vigorous diverse understory of grasses and forbs beneficial to grouse. Maintenance of residual stubble and herbaceous cover >15 cm during nesting season in May and June is important for increasing sage grouse survival and recruitment into the population by as much as 30%. Improvements to and protection of wet meadows and riparian areas will also benefit sage grouse by improving brood rearing habitat and chick survival.

Currently, sage grouse appear to use California Park lightly, primarily in the summer and fall months. No known sage grouse leks occur in California Park although suitable habitat exists. Use is greater in the Slater park area, and occurs during spring - fall. An inactive lek site is located in Slater Park, with

other active leks occurring on Non-Forest Lands further to the north and west. It is unlikely that the sage grouse remain in California or Slater Park in the winter due to snow depth. Sage grouse have not been documented on the spring dancing lek in Slater Park since 1992, however in 1994 a female sage grouse was documented nesting in close proximity to the lek and two males were observed in the surrounding area. Adult sage grouse have been observed in the Parks during summer and fall periods in recent years. Sage grouse have historically occupied the CPSIA in larger abundances than they do currently, and the disappearance of activity on the breeding site in Slater Park is discouraging. The CPSIA has the potential to support a viable breeding population of sage grouse as long as the habitat is managed in their best interest. Once the sage grouse plan is completed its guidelines will be considered for incorporation into the CPSIA management plan and may be attached as an appendix to this management plan.

Sharp-tailed Grouse

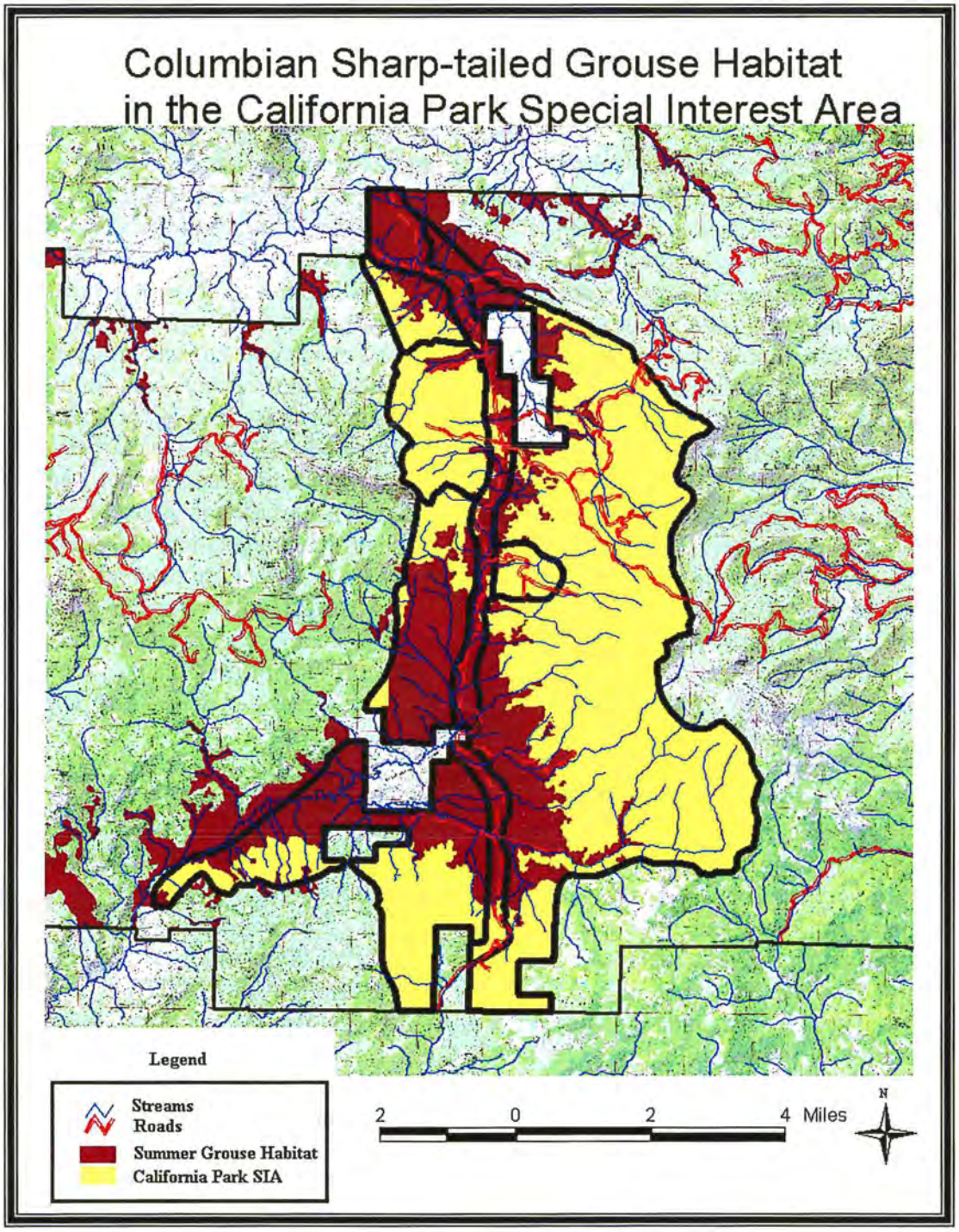
Columbian sharp-tailed grouse inhabit suitable shrub-steppe communities in northwestern Colorado, including the California Park and Slater park vicinities. Their populations and distribution declined markedly in the mid-1900's, due primarily to loss and degradation of important habitats. Recently, however, their populations have increased in Colorado (Routt and Moffat Counties). Columbian sharp-tailed grouse have 4 seasons/habitats that are physiologically important for their reproduction and survival. These include lekking (breeding), nesting, brood-rearing, and winter. Sharp-tailed grouse show a great deal of flexibility in the specific habitat types and species composition that provide suitable habitat for their occupation. The proportion of shrub cover used during spring – fall can vary from 0 - 40%, and be dominated by a variety of shrubs or grasses. Columbian sharp-tailed grouse seek out areas that are elevated and open for lekking, while using shrub rangelands and bunchgrass/forb areas for nesting and brood-rearing. What is important to CSTG for determining suitable nesting and summering areas is the height and density of cover, regardless of whether it is herbaceous or shrub. They prefer vegetation that is approximately 20-30 cm tall by early summer, with vegetation <15 cm being of no value to them. The diversity and forb component of the vegetation is also important to the grouse for food and cover. During winter sharp-tailed grouse rely on tall shrub habitat to provide food and protection. In Colorado these habitats are primarily composed of serviceberry and chokecherry, although they will also use aspen and willow. CSTG do not normally migrate during winter and require these winter shrub habitats to be nearby their summer ranges, however they have been documented moving up to 25 miles seasonally in Colorado.

Currently there are four known CSTG leks in the CPSIA. One of the leks is in Slater Park and the other 3 are in California Park. All of the leks have been used annually over the last several years, and 2 of them have been documented as historical leks being used as early as the 1960's. Annual spring lek counts indicate a very small but stable population, with 4 to 20 males being observed on individual leks during spring counts. It has been determined that the California Park population of CSTG do not winter in the CPSIA, but rather move to lower elevational winter habitats on adjacent private land. The CPSIA is most important for breeding, nesting, and brood-rearing. This population of CSTG is the only known population on National Forest lands in Colorado, thus the CPSIA remains a popular hunting area for sharp-tailed grouse during the fall.

Some areas in the eastern part of California Park have been identified as currently unsuitable grouse habitat, although they were likely suitable habitat historically. The area has little to no foraging, nesting, or brooding habitat for sharp-tailed grouse. The following species were identified as important

components for CSTG habitat, but were lacking from the identified area: American vetch (*Vicia americana*), creamy peavine (*Lathyrus leucanthus*), sulphur buckwheat (*Eriogonum umbellatum*), thurber fescue (*Festuca thurberi*), mountain brome (*Bromus marginatus*), basin wild rye (*Leymus cinereus*) silver sagebrush, mountain big sagebrush, and snowberry. Improvement of this area would provide more habitat for sharp-tailed grouse in the CPSIA and possibly increase population numbers.

Figure 3. Columbian Sharp-tailed and Sage Grouse Habitats in the California Park Area



Management Implementation Guidelines – Sage and Columbian Sharp-tailed grouse

The CPSIA Integrated Management Plan tiers to the Forest Plan and incorporates appropriate portions of the Northwest Colorado Columbian Sharp-tailed Grouse Conservation Plan (CDOW 2001) Additional information and management actions that may improve sage and sharp-tailed grouse habitats is included in the conservation plan (Appendix A.). The greater sage-grouse and CSTG have similar needs and utilize similar spring, summer and fall habitats. Since the conservation plan for sage grouse in northwestern Colorado is not complete, the Northwest Colorado Columbian Sharp-tailed Grouse Conservation Plan (CDOW 2001) will guide management actions for both sage and sharp-tailed grouse conservation within suitable habitat of the CPSIA.

Goals

- Achieve and maintain parklands in the CPSIA in a natural state that provide quality nesting and brood-rearing habitats and support a viable spring – fall population of sage and CSTG.
- Achieve and maintain an average of 6 CSTG and 1 greater sage-grouse breeding (lek) sites that have an average spring attendance ≥ 15 males per lek within the California Park Special Interest Area.
- Restore and maintain vegetative cover at levels that meet the objectives and/or guidelines recommended in the CSTG or greater sage grouse conservation plans.
- Maintain grazing management practices that achieve and maintain desired ecological conditions throughout the range.
- Maintain grazing management practices that allow for flexibility and adaptability to habitat conditions.

Management Implementation Guidelines

- Maintain parklands within the SIA in a mosaic of 15-35% sagebrush canopy predominantly in mid-seral stage (most plants being 16-31 inches tall), interspersed with deciduous shrubs, grasses (primarily bunchgrasses), and a variety of forbs native to the sagebrush type (Boisvert 2001).
- Maintain grass and forb canopies within the sagebrush type to be > 20%, with no less than 8% cover of desirable forbs, and an average of approximately 20 different plant species per acre.
- Retain a residual stubble height of > 6 inches in the spring, with perennial herbaceous cover averaging > 8-12 inches during the nesting and brood-rearing seasons.
- Promote riparian conditions that are dominated by vigorous perennial vegetation of desirable species and include abundant willow and alder native to the area.
- Retain open suitable habitat for breeding at active and historic lek sites in the CPSIA.
- Eliminate potential impacts and threats to sage and CSTG during the breeding and nesting periods.

Opportunities

- Conduct annual spring surveys and counts of sage and sharp-tailed grouse leks in the CPSIA.
- Implement the recommended management strategies outlined in the Northwest Colorado Columbian Sharp-tailed Grouse Conservation Plan that are applicable to the CPSIA. (or the conservation plan for greater sage-grouse in northwest Colorado – when completed).
- Design and implement grazing strategies to reduce impacts in the sagebrush type and provide adequate residual grass and forb cover in grouse breeding, nesting and brood rearing areas.
- Reduce wild and domestic ungulate grazing impacts on native tall shrub species in the CPSIA, including serviceberry, chokecherry, willow, and alder.

- Reduce wild and domestic ungulate impacts to sage grouse and CSTG during the breeding and nesting periods.
- Identify key grouse areas within the CPSIA and assess the capability of those sites for establishment of desired plant species and vegetative structure.
- Establish areas for testing soil and vegetation treatments to determine potential success of larger scale projects such as removing tarweed.
- Where possible, restore native grasses and forbs that have decreased within the SIA and are beneficial to grouse. These include, but are not limited to, such species as basin wildrye, Thurber fescue, Idaho fescue, mountain brome, sulphur flower, American vetch, creamy peavine, pale agoseris, and blue flax.
- Collect and redistribute locally native sagebrush seed on areas identified in the CPSIA as lacking adequate sagebrush cover.
- Control and manage invasive plant species to protect and enhance the quality of desirable native plant communities.
- Identify segments of streams that are "at risk" and develop strategies to move towards PFC.
- Manage and control existing noxious weeds within sage grouse and CSTG habitats.

Greater Sandhill Cranes

The sandhill crane is thought to be one of the oldest living species of birds in North America. The Rocky Mountain population of greater sandhill cranes is a migratory species that nests in undisturbed willow-lined drainages surrounded by open meadows and parks throughout the Rocky Mountains during summer; and open, flat, marshy river drainages in Mexico and New Mexico during winter. The greater sandhill once bred widely in meadows and marshes throughout the West, however substantial losses and degredation of this habitat type, and over-hunting of the crane during the early 1900's caused large declines in their population numbers and distribution. In Colorado they had been reduced to only 25 breeding pairs by the 1950's. In 1953 there were only 3 nesting pair in the California Park area (pers. communication with John L. Sundberg). This prompted the state of Colorado to list them as an endangered species in 1973, and Region 2 of the Forest Service to list them as a sensitive species. Since then, intensive efforts have been made to recover their populations within the state, including the U.S. Forest Service's participation in closing California Park to grazing and motorized use until July 1 of each year. The greater sandhill crane has now been downlisted to a Colorado state species of concern but remainsl a Forest Service Region 2 sensitive species. The California Park area is considered an 'indicator area' for the larger state population by the Colorado Division of Wildlife.

The sandhill crane uses both California and Slater Parks for nesting and brood-rearing, with birds arriving in the area in early May and leaving in late August. California Park is a critical area to the sandhill crane population, and it provides the highest concentration of nests in Colorado. It was also thought to be the "stronghold" of the bird during its recovery. Slater Park also supports nesting, but the habitat does not appear to be as suitable as California Park. Since cranes nest on the ground, rarely renest, and their size makes them quite conspicuous, quality nesting habitat is crucial for their success. They require thick, mature willow stands along drainages and beaver ponds that allow them cover and water, providing protection from predators. Colorado Division of Wildlife studies indicate that nest success in the CPSIA have been fairly good (>60%) and that nesting cover is suitable. However, anything that can increase willow cover and stimulate and maintain beaver populations will likely help the cranes. Sandhill crane chick survival to fledging is dependent on healthy aspen/forb and sagebrush/forb communities, and appears to be more of a limiting factor to crane productivity than nest success in the CPSIA.

Although the Forest limits grazing in California Park until after July 1, sheep do come onto State Land Board lands near Elkhead Creek prior to this and may have some impact on nesting cranes. Sandhill cranes are very intolerant of disturbance during the nesting season, and will probably only continue to do well in areas where disturbances are minimized prior to July 1. The protection of the cranes during nesting in the CPSIA is thought to be benefiting their nest success, and their protection from disturbances during the nesting season is crucial. Although their success has been significant, little is known about the suitability of the nesting and chick rearing habitats within the CPSIA, and whether these could be improved to further increase crane productivity.

Fully understanding why the greater sandhill crane is considered a special value of the CPSIA is best stated by Aldo Leopold. "Our ability to perceive quality in nature begins, as in art, with the pretty. It expands through successive stages of the beautiful to values yet uncaptured by language. The quality of cranes lies, I think, in this higher gamut, as yet beyond the reach of words." "When we hear his call we hear no mere bird. He is the symbol of our untamable past, of that incredible sweep of millennia which underlies and conditions the daily affairs of birds and men." "And so they live and have their being – these cranes – not in the constricted present, but in the wider reaches of evolutionary time." "The

sadness discernible in some marshes arises, perhaps, from their once having harbored cranes. Now they stand humbled, adrift in history."

Management Implementation Guidelines – Greater Sandhill Crane

The CPSIA Integrated Management Plan tiers to the Forest Plan and where appropriate will include recommendations for sandhill crane management as identified in the Greater Sandhill Crane Habitat Management Plan (Appendix B). This Management Plan will also consider management recommendations in the CDOW Greater Sandhill Crane Fledging Success and Recruitment in Northwest Colorado Reports.

Goals

- Maintain a high nesting density (approximately 23 pairs) of sandhill cranes, and the CPSIA's significance as a "stronghold" for sandhill crane populations in Colorado.
- Achieve and maintain healthy riparian, sagebrush, and aspen forests in to provide suitable nesting and rearing habitats which support a high density of sandhill cranes in the CPSIA.

Management Implementation Guidelines

- Protect currently occupied nesting sites and adjacent rearing habitats.
- Maintain high sandhill crane nesting density in California Park, and increase Slater Park nest densities to their maximum potential.
- Manage riparian nesting habitats and parkland and aspen forest chick rearing habitats for the benefit of the greater sandhill crane.
- Restrict camping within 100 ft of riparian areas unless otherwise designated.
- Maintain spring closure of FDR 150 unless more detailed monitoring evaluations indicate that the closure is not necessary.

Opportunities

- Implement the recommended management strategies for sandhill cranes, which are presented in the Greater Sandhill Crane Habitat Management Plan (Appendix B) and CDOW Reports.
- Assess, restore and maintain riparian-wetland areas in proper functioning condition.
- Determine disturbance impacts to nesting cranes within the CPSIA, but outside of the annual road closure period.
- Evaluate the need to maintain annual FDR 150 road closure from May 1 to July 1.
    - Maintain road closure agreement with Routt County Road Department as needed.
- Evaluate the differences between Slater and California Park that may contribute to the lower crane densities found in Slater Park, determine whether there is potential for habitat improvements that could increase nest densities in Slater Park.
    - Consider moving the gate at the north end of California Park to the north end of Slater Park if early spring disturbance in Slater Park is determined to be a factor resulting in the low nesting density currently occurring in the Slater Park area.
- Determine critical brood-rearing habitats in the CPSIA and evaluate the habitat quality and associated chick survival.
- Assess ungulate impacts to occupied nesting sites and to nearby upland and aspen brood-rearing habitats, and adjust management where needed.
- Improve upland and aspen habitats used for brood-rearing.
- Control and manage invasive plant species to protect and enhance the quality of desirable native

plant communities.

- Determine impacts to nesting cranes from grazing on State Land Board lands before July 1.
- Work with partners to maintain off-Forest staging grounds important to the Routt National Forest sandhill crane population.
- Map all known and historic crane nesting and brood-rearing areas.
- Apply for funding for a helicopter population monitoring flight.
    - May be an opportunity to combine with other project work (grouse, fire, beetles) to reduce needed funds.

Boreal Toads

The boreal toad is listed as an endangered species in the state of Colorado, a sensitive species in Region 2 of the Forest Service, and as warranted but precluded from listing under the federal Endangered Species Act. The southern Rocky Mountain boreal toad inhabits forest habitats between 7,500 and 12,000 feet. There are 3 seasons/habitats that are significant to the boreal toad. These include breeding, summer, and winter. Breeding takes place in shallow slow water of lakes, ponds, marshes, or streams and generally occurs in late May and early June, coinciding with snowmelt. Young toads are restricted in distribution and movements by the presence of water, while adult toads can move considerable distances to and from the breeding site making use of wet meadows and forested areas. Although once common in mountainous areas of Colorado, the boreal toad has suffered from dramatic population declines over the last 15-20 years. Causes of these declines are largely unknown, although climatic changes, loss of habitat, and decreased habitat quality, and diseases are considered as possibilities. One breeding site has recently tested positive for the chytrid fungus. It is unknown how the presence of this fungus will affect the population but declines are expected.

The protection and management of boreal toads in the California Park SIA is one of the primary objectives of land management within this SIA. Extensive surveys for boreal toads in the CPSIA located 2 separate areas of their occurrence in California Park. Young toads and tadpoles have been observed on First Creek and its tributaries, although a specific breeding site has not been identified. A specific breeding site of boreal toads has been located on Elkhead Creek near the confluence of Torso Creek. Successful reproduction occurred at this site in 2000, 2001, 2002 and 2003. A permanent exclosure was constructed around ½ mile of the creek in 2001 to protect the site and adjacent riparian and upland toad habitats. Some of the tadpoles produced in the Torso Creek site have been collected and transported to a CDOW endangered aquatic species hatchery for captive breeding. No populations of toads have been found in Slater Park in recent years.

Because of the status of boreal toads and their vulnerability to disturbances and impacts from livestock and recreation, their protection within the CPSIA has become critical. Degradation of stream habitats can greatly affect boreal toad reproduction and survival. Both recreation and grazing can cause loss of quality riparian vegetation, decrease bank cover and stability, increase erosion and sedimentation, and reduce water quality. These activities can also cause direct mortality to toads by trampling. It is essential to protect boreal toad populations from extinction with in the CPSIA by actively protecting the breeding sites, and to manage other riparian habitats, particularly along Elkhead and First Creeks.

Management Implementation Guidelines – Boreal Toad

This Integrated Management Plan tiers to the recommendations in the Boreal Toad Conservation Plan and Agreement (Appendix C)

Goals

- Achieve and maintain a viable metapopulation[2] of boreal toads and high quality boreal toad habitat within the California Park SIA.
    - Maintain at least two breeding sites within the CPSIA.
    - Maintain at least 25 male boreal toads present at each breeding site each spring.
- Maintain riparian-wetland areas in Proper Functioning Condition.

Management Implementation Guidelines

- Protect currently occupied habitat.
- Reduce potential impacts and threats to boreal toads and breeding areas.
- Design and implement grazing strategies to eliminate potential impacts to breeding sites and adjacent upland boreal toad habitat.
- Restrict camping within 100 ft of riparian areas unless otherwise designated.

Opportunities

- Implement the recommended management strategies for boreal toad habitat, which are presented in the Boreal Toad Conservation Plan and Agreement.
- Conduct annual monitoring of known populations and surveys of all potential habitats.
- Minimize incidences of trampling by livestock.
- Develop projects that improve boreal toad habitat.
- Close campsites and trails in boreal toad breeding habitat occupied within the last 10 years.
- Apply seasonal fishing closures when it impacts occupied boreal toad habitat.
- Maintain vegetative cover requirements necessary to meet the recovery needs of the boreal toad.
- Assess impacts to boreal toad habitats by elk.
- Reintroduce captive-reared boreal toads into the California Park SIA to supplement the existing population and attempt to establish a second known breeding site.
- Conduct population viability analysis in cooperation with the CDOW (pg 19, BTCPA).
- Convert the California Park gravel pit into a wetland suitable as a boreal toad breeding site.

[2] As defined in the Boreal Toad Conservation Plan and Agreement

Colorado River Cutthroat Trout

The Colorado River cutthroat trout (CRCT) is listed as a species of concern by the state of Colorado, a sensitive species by Region 2 of the Forest Service, and was petitioned for listing under the federal Endangered Species Act. The Colorado River cutthroat trout is native to tributaries in the upper Colorado River basin and they thrive in cold, clean water environments.

Colorado River cutthroat trout evolved in isolation from rainbow and other trout. For this reason, the subspecies is vulnerable to hybridization with rainbow trout and to replacement by brook trout and brown trout (Behnke 1992). Introductions of non-native salmonids may have had the greatest effect to Colorado River cutthroat trout and may affect them in different ways. Rainbow trout and non-native subspecies of cutthroat trout readily hybridize with Colorado River cutthroat trout and produce fertile offspring. More populations of Colorado River cutthroat trout may have been lost through hybridization than any other cause (Behnke and Zarn 1976). Brook trout usually oust most subspecies of inland cutthroat trout especially at lower elevations and in low gradient streams (Fausch 1989.) Competition is often suspected as the mechanism leading to replacement, but this has never been demonstrated (Fausch 1988). Water temperature can affect the outcome of competitive interactions between brook trout and Colorado River cutthroat trout and this may confer a competitive advantage to brook trout at lower elevations (Young 1995).

Behnke (1979) stated that Colorado River cutthroat trout occupy less than one percent of their historical range. Their current range in the Yampa and Little Snake Rivers is primarily on National Forest Lands. Martinez (1988) reported that of 37 populations in northwestern Colorado sampled from 1978 to 1987, 12 apparently declined in genetic purity, three were replaced by brook trout, and one population disappeared, possibly because of over harvest.

CRCT have a fairly strong population in Elkhead Creek, the main watershed in the CPSIA, and also occupy most areas of Slater Creek. The population of CRCT in the Elkhead Creek watershed could be considered a metapopulation[3]. Streams include Elkhead Creek and its tributaries, Armstrong Creek, Circle Creek, First Creek, Jokodowski Creek, Stuckey Creek and Torso Creek. Brook trout are present in the Elkhead Creek and Slater Creek watersheds and are considered a threat to the CRCT populations in both systems. Although recreational fishing can sometimes be detrimental to CRCT populations, the existing level of fishing currently occurring in the CPSIA is not considered a threat to these populations. Cutthroat trout habitat quality varies within the CPSIA. Some areas, primarily upper stream reaches, are in good condition and other areas are in bad condition. Areas that are currently in poor condition are not recovering properly and will need direct management action to reverse the trend. Many of theses reaches are too wide with severe bank erosion. The CPSIA naturally has highly erodible soils, creating the potential for severe erosion when these soils are disturbed. This potential is compounded by many impacts in the CPSIA including roads, trails, campsites near the creeks, high elk numbers, and sheep and cattle grazing. The CPSIA also has a moderate amount of beaver activity. Beavers are important in maintaining riparian areas and high water tables. The lowering of the water table due to down cutting of channels, heavy grazing of riparian vegetation by elk and livestock, and trampling of streambanks by

[3] A metapopulation is a collection of 5 localized populations that are geographically distinct yet are genetically interconnected through natural movement of individual fish among populations as defined in the Conservation Agreement and Strategy for Colorado River Cutthroat Trout (*Oncorhynchus clarki pleuriticus*) in the States of Colorado, Utah and Wyoming, April 2001..

ungulates are resulting in the deterioration of riparian willow communities. This is contributing to an increase in water temperatures and sedimentation of the creeks. Poor habitat quality and brook trout competition are the major factors influencing the CRCT metapopulation in Elkhead Creek. CRCT populations in Slater Creek are experiencing many of the same influences as Elkhead Creek.

Purity testing has been done for Armstrong Creek, Circle Creek, Elkhead Creek and First Creek with purity ratings of A- for the populations in these creeks. Torso Creek has a purity rating of B-. Populations in other streams in the Elkhead Creek watershed as well as the streams in the Slater Creek watershed have unknown purity ratings because either they have not been tested or results have not come in yet.

Brook trout have been removed in Armstrong Creek, Circle Creek and Torso Creek since 1997. These efforts have been very successful, especially in Armstrong Creek because brook trout are not present in Armstrong Creek anymore. Circle Creek and Torso Creek still have fairly large numbers of brook trout present. The Torso Creek and lower Elkhead drainages were stocked as recently as 1993 with brook trout.

In order to achieve the management goals for CRCT, it will be necessary to improve habitat conditions and to protect the existing population of CRCT. Improving the riparian condition will help reduce erosion and sediment input into CRCT habitat, stabilize stream banks, increase shading, facilitate lower water temperatures, maintain high water table, and aid in narrowing and deepening the channel.

Management Implementation Guidelines – Colorado River Cutthroat Trout

The CPSIA Integrated Management Plan tiers to the Aquatic Wildlife Management Plan Yampa River Basin, Colorado and the Conservation Agreement and Strategy for Colorado River Cutthroat Trout (*Oncorhynchus clarki pleuriticus*) in the States of Colorado, Utah and Wyoming, April 2001 (Appendices D and E, respectively).

Goals

- Achieve and maintain high quality habitat for Colorado River cutthroat trout within the California Park SIA.
- Achieve and maintain a viable, self-sustaining metapopulation of Colorado River cutthroat trout in the Elkhead Creek and Slater Creek (upstream from Slater Creek Falls) watersheds.
- Improve water quality by improving riparian and upland conditions; increasing bank stability, bank vegetative cover, channel deepening, and decreasing erosion and sedimentation.

Management Implementation Guidelines

- Eliminate or reduce brook trout populations within Elkhead Creek and Slater Creek watersheds within 5 years as measured by annual electrofishing efforts.
- Improve riparian conditions as measured by PFC surveys within 5 years.
- Design grazing management to restore and maintain the riparian area in proper functioning condition.
- Improve substrate composition as measured by Wolman Pebble Counts within 5 years.

Opportunities

- Determine the purity of all CRCT stream populations within the CPSIA in cooperation with the Colorado Division of Wildlife.
- Identify spring spawning habitat and determine if ungulate grazing and recreational activities are impacting this vital habitat.
- Annually remove brook trout in the Elkhead Creek watershed by electrofishing or gill netting.
- Design and implement a brook trout removal project in Slater Creek with cooperation from the Colorado Division of Wildlife.
- Work cooperatively with the Colorado Division of Wildlife in implementing the Aquatic Wildlife Management Plan Yampa River Basin, Colorado.
- In the year 2006, when the Conservation Plan is up for re-authorization, approach the CRCT Task Force to have the Elkhead Creek watershed declared a metapopulation and for the Task Force to recognize the efforts in moving towards a metapopulation in Slater Creek.
- Improve the culvert crossing on FDR 150 at First Creek.
- ✓ Close and rehabilitate road and camping area at FDR 150 culvert crossing on First Creek.
  - ➨ Completed in 2001.
- Close and rehabilitate FDR 151 east of FDR 150.
- ✓ Repair stream crossing on FDR 154 at Slater Creek, replacing stream in original channel.
  - ➨ Completed in 2002 and 2003.
- ✓ Improve stream crossing on FDR 156 at Slater Creek.
  - ➨ Completed in 2003.
- Determine if area specific fishing regulations need to be implemented to reduce fishing pressure and protect the existing population.
- Minimize impacts to beaver activity in Elkhead and Slater Creek watersheds.
- Field evaluation of fish populations in conjunction with the CDOW.

Slater Park Macro Preliminary Conservation Planning Area

The Slater Park Macro Preliminary Conservation Planning Area (SPMPCPA) is 1 of 3 macro sites identified by the Colorado Natural Heritage Program for the Routt National Forest. The area is 16,609 acres in size, of which a portion lies within the CPSIA. The SPMPCPA boundary was delineated to identify significant natural communities and the breeding habitat of wetland and upland birds and amphibians in need of protection and specific management. The CPSIA management plan provides the additional guidance needed for appropriately managing the SPMPCPA within the CPSIA

Preliminary Conservation Planning Areas are evaluated based on biodiversity significance ranks and protection and management urgency levels. The rankings for the SPMPCPA are as follows:

Biodiversity significance rank 2 - very high significance. Species and plant communities that influence the biodiversity significance rank include: boreal toad (*Bufo boreas boreas*), greater sandhill crane (*Grus canadensis tabida*), *Picea pungens / Alnus incana*, *Salix boothii /* mesic *graminoid*, *Salix wolfii / mesic* forb, *Carex aquatilis* wetland.

Management urgency level 2 - essential within 5 years to prevent loss. New management needed for livestock. The entire park should be managed as an ecosystem.

Protection urgency level 3 - definable threat / opportunity, but not within 5 years. Threats could be from previous Forest Plan (1983) management prescription. Breeding population of boreal toads should be considered for special area designation in Forest Plan revision (1997 Forest Plan).

Management Implementation Guidelines – Slater Park Macro Preliminary Conservation Planning Area

Goals

- Maintain the biodiversity significance of the SPMPCPA and reduce the protection and management urgency levels.

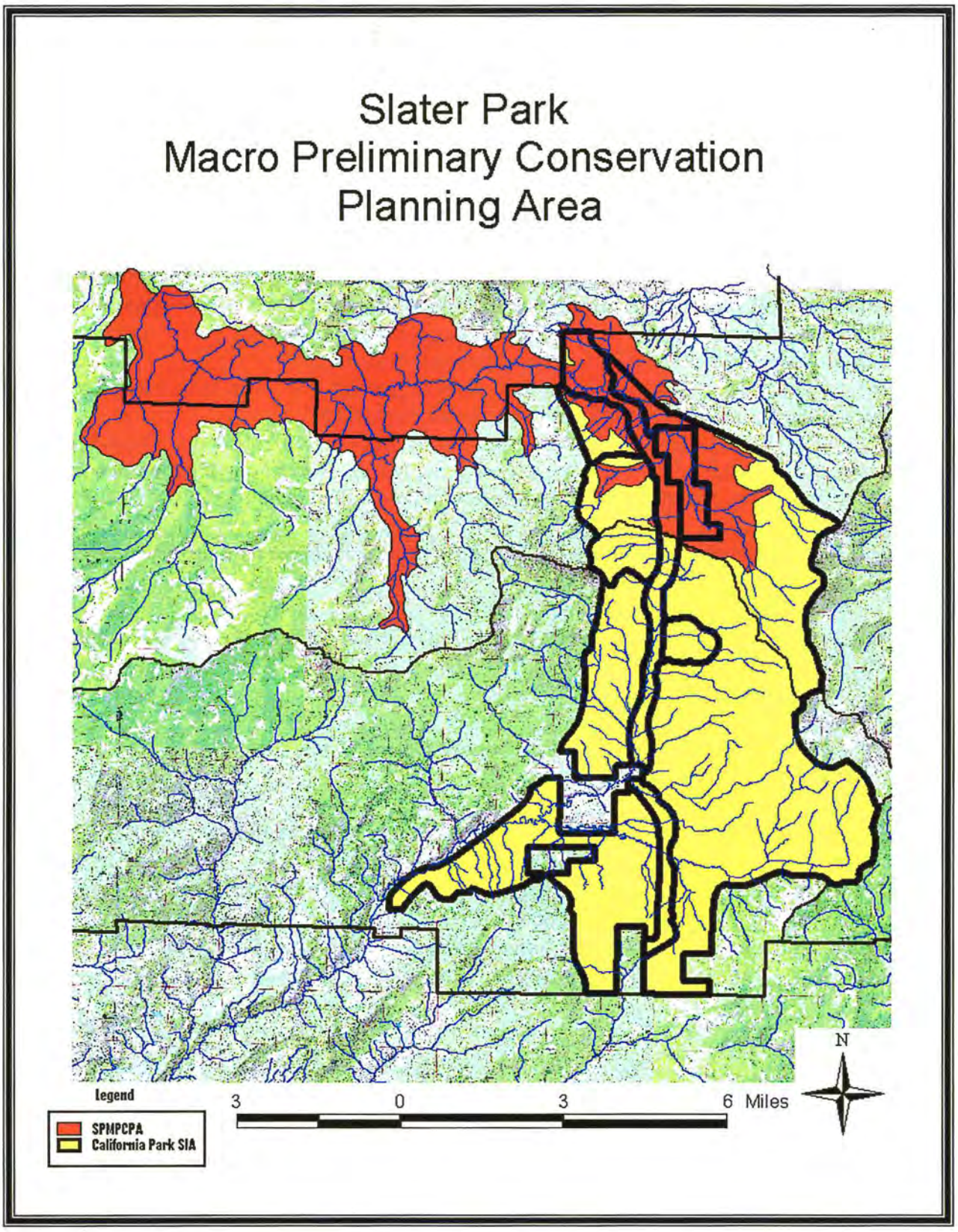
Management Implementation Guidelines

- Protect and manage the SPMPCPA Biodiversity species within the CPSIA.

Opportunities

- Determine when the initial assessment was conducted by the Colorado Natural Heritage Program.
- Work with the Colorado Natural Heritage Program to identify specific areas of importance (locations of plant associations) and concern.
- Develop strategies to improve protection and management of the SPMPCPA.
- Update Range Allotment Management Plans within the SPMPCPA.

Figure 4. Slater Park Macro Preliminary Conservation Planning Area



Limber Pine

Limber Pine is an uncommon coniferous tree species on the Routt National Forest. Many of the remaining limber pine are considered ecological relics, existing in small populations across the Forest.

Limber pine are recognized for their ability to grow on some of the most exposed and inhospitable sites on the RNF. The name "limber" is derived from the tremendous flexibility of its branches, which can almost be bent back over themselves without breaking. This adaptation has ensured the survival of this species, which grows in an environment so hostile, that the high winds and snowfall would snap the branches off of most any other tree. They can be found in many elevations and soil types in the west, but commonly grow on ridgetops and rocky areas at higher elevations in Colorado. Limber pines don't reach maturity until about 300 years and are extremely long lived, reaching 1,000 years of age or more. Due to exposure to wind, snow and extreme cold, they grow in gnarled and twisted forms, and are relatively short, rarely exceeding 50 feet.

Limber pines, like other pines, produce seed contained in cones. Large seed crops may only be produced every 2 to 4 years. The seeds are eaten by birds and small mammals, which provide them with an important source of nutrition. These animals often gather and cache the seeds, for later use, when food is scarce.

Management Implementation Guidelines – Limber Pine

Goals

- Maintain and interpret relic limber pine in the CPSIA.

Management Implementation Guidelines

- Promote public understanding of the CPSIA limber pine population.
- Avoid management actions that may impact the CPSIA limber pine population.

Opportunities

- Map known locations of limber pine in the CPSIA.
- Assess the current condition of the CPSIA limber pine population.
- Protect declining or impacted limber pine
- Assess regeneration success in limber pine
- Develop interpretative information highlighting limber pine.
- Gather information on limber pine on the RNF necessary to evaluate the significance of the CPSIA limber pine population.

Geological Values

The geology of the CPSIA has a number of unique features including sulphur springs, lava dikes, large areas of mobile soils, and high concentrations paleontological resources. The geologic values of the CPSIA not only contribute to the uniqueness of the CPSIA they are also important in influencing the biological diversity found in the area.

One unique geological value of the CPSIA includes the presence of sulphur springs. While sulphur springs are uncommon on the Routt National Forest, at least 6 sulphur springs occur in the CPSIA. Several of the sulphur springs are reported to have been historically hot. The sulphur springs are generally small, inconspicuous and highly disturbed by domestic and wild ungulates which use the springs as a sources for minerals.

It has been proposed that if it were not for the presence of a lava dike in the lower portions of the Elkhead Creek drainage, that the upland parks in the CPSIA would of eroded away thousands of years ago. Lava dikes have also been observed in the Slater park portion of the CPSIA near Forest trail 1147. The soils in the CPSIA are highly mobile and it is not uncommon to observe several slumps and landslides through out the CPSIA. These areas of 'mobile real estate' provide an opportunity to see and interpret these areas of highly mobile soils. The mobile soils in the CPSIA also present a challenge to managing the vegetation and roads in the area as disturbances to these soils can cause the soils to slump.

The CPSIA is known to have numerous paleontological resources including fossils and buffalo skulls. Giant clams have been found in the park along with other fossils including ancient fish that indicate that the area was once an inland sea. While some fossils have been found in the CPSIA, there is still much to be learned about the areas prehistoric past. Identification and assessment of paleontological resources on federal lands is called for under the Routt National Forest Land and Resource Management Plan in Appendix B: National and Regional Policies; Section 110 of the National Historic Preservation Act of 1966 [P.L. 89-665 (October 15, 1966)]; Executive Order 11593 [30 CFR 8921(May 13, 1971)]; and Executive Order 13287 [68 CFR 10635 (March 5, 2003)]. Ideally, all paleontological resources in the CPSIA would be identified, recorded, evaluated for significance, and assessed for effects. Recommendations could then be provided for proactive management of significant fossil localities, including scientific research, stabilization, and interpretation.

Management Implementation Guidelines – Geological Values

To preserve, manage, study, and interpret geological resources they must first be located, recorded, and evaluated for significance. Geographic Information Systems (GIS) and remote sensing can be used to focus in on surficial formations likely to contain important fossils or geologic features. During the recording process, paleontologists should also assess locality condition and potential threats, and recommend future actions to preserve, manage, study, and interpret significant paleontological resources.

Goals

- Interpret and educate the public on the land forms and soils in the CPSIA.
- Improve the soil resource that has been impacted by historic over-grazing uses.
- Identify, preserve, manage, study, and interpret paleontological resources in the CPSIA.
- Promote public understanding of the CPSIA paleontological resources.

Management Implementation Guidelines

- Promote public understanding of the geological values in the CPSIA.
- Design and implement management actions to avoid impacts the CPSIA paleontological resources.
- Eliminate potential impacts and threats to important paleontological resources.

Opportunities

- Identify and map all locations of sulphur springs in the CPSIA.
- Evaluate the impacts of ungulates to the sulphur springs in the CPSIA.
- Assess opportunities for enhancement and interpretation of the CPSIA sulphur springs
- Map and classify all highly mobile soils.
- Map and classify soils that have been impacted by historic grazing practices.
- Identify areas where soil improvement and revegetation can occur.
- Identify areas where 'mobile real-estate' soil movement is occurring.
- Develop an interpretative sign and pull-out that explains the land forms, soils and "mobile real-estate" in the CPSIA.
- Create a predictive GIS model to identify areas where formations that may contain significant fossils that could be exposed on the ground surface.
- Conduct field surveys in these areas to identify, record, and evaluate fossils. Assess locality condition and potential threats, and recommend future actions to preserve, manage, study, and interpret significant paleontological resources.
- Assess site condition and potential threats, and develop recommend future actions to preserve, manage, study, and interpret significant paleontological resources.
    - Develop management recommendations to preserve, manage, and interpret the CPSIA paleontological resources.
- Consider interpreting paleontological sites in the CPSIA.

Historical Values

The California Park Special Interest Area was designated in part due to the historical values in the area. The CPSIA historical values include: prehistoric archaeological sites, historic stock driveway and associated domestic livestock grazing, and homesteads and cabins.

Prehistoric Archaeology

The prehistoric occupation of the Routt National Forest (RNF) appears to have been fairly continuous, if not intensive, from at least 11,000 years before present (B.P.) until historic contact with the Ute and Arapaho.

The earliest evidence of human activity in north-central Colorado comes from the Paleoindian period, commonly defined as lasting from approximately 11,500 to 8,000 years B.P. Paleoindian lifeways are thought to have been largely dependent on big game hunting, especially during the late Pleistocene and early Holocene when megafauna still existed.

The Archaic period spans the time period from approximately 8,000 to 2,000 or 1500 B.P. Archaic lifeways are poorly understood, but are believed to have been highly adapted to the environmental conditions of a particular region. Hunting and gathering remained the exclusive method of subsistence.

The Late Prehistoric period witnessed the introduction of the bow and arrow into hunting tool kits, as well as the limited use of ceramic vessels, into the mountains of northern Colorado. Many desert side-notched ("Ute") arrow points, as well as Plains-style arrow points, have been located on the RNF. Ceramic sherds are not common, but a few sherds of utility ware have been found on the forest.

The Ute occupied the RNF for at least 300 to 400 years, and may have migrated to this area as early as A.D. 1300, based on linguistic evidence (Miller 1986). The Arapaho, Shoshone, Cheyenne, and possibly Kiowa, utilized the mountains of this area to a lesser extent until the 1700s. After 1810, the Ute and Arapaho competed over hunting territory (Hughes 1977:36). In 1879 the White River, Yampatika, and other Ute bands were forcibly removed from their traditional lands and placed on the Northern Ute Reservation in Utah.

American Indian use of California Park is evident in the archaeological sites already identified in the area. In addition, Ute traditional tribal knowledge identifies California Park as a location for gathering native edible (Yampa) and medicinal (Osha) plants. The significance of the CPSIA to Native Americans is still unclear. Additional investigation and field surveys are needed.

Historic Stock Driveways and Domestic Livestock Grazing

Livestock ranching proved to be the most important long-term economic activity in the north-central portion of Colorado. Although the imminent failure of the mines prompted many early settlers to begin raising livestock, it was some time before crops and methods suitable to the basins and high alpine meadows of northern Colorado were developed (Mehls 1984a). The short growing season and variable precipitation patterns of the region dictated that the most successful agricultural product was hay, not only for cattle, but also for the horses and mules utilized in the region's mining camps.

Once the Union Pacific opened lines in southern Wyoming, cowboys were able to ship cattle westward to untouched grazing lands. Soon after, ranchers moved herds to the Little Snake, Yampa, and White River valleys, as well as into North Park. During the heyday of ranching in the 1880s, 1890s, and early 1900s, the ranges were open and ranchers followed a pattern of seasonal land use, letting their herds roam free in the high mountain valleys and meadows during the summer and bringing them back to lower elevations during the winter (Athearn 1982).

The initial success of beef producers in north-central Colorado was tempered by several important factors. Cattle ranchers feared the introduction of sheep in the early 1900s, because of the inevitable competition for grazing lands. Sheep were already in southern Colorado and the San Luis Valley in the 1860s, but it was not until 1890 or 1891 that the first sheep came into northwestern Colorado, driven by sheep rancher Johnny Wilkes from Wyoming.

Additional pressure was put on the sheep and cattle industries after the establishment of the National Forests in 1905. Much of the land that previously had been grazed was withdrawn as timber reserve land and, in addition, herders and ranchers were required to apply for grazing permits. The permits decreased the unregulated grazing, but still allow substantial grazing numbers. In 1907, Wyoming sheep were allowed to graze on the RNF. Up until 1925, eighty percent of the sheep on the Routt were from Wyoming because there were no resident sheepmen in northwestern Colorado.

The California Park and Slater Park basins were used for summer grazing thousands of cattle by many of the large cattle outfits. California Park served as a round up area. The Beef Trail was started around 1870 and thousands of cattle were trailed from the Little Snake River Valley through Slater Park, California Park, Steamboat Springs, Yampa, and Toponas, all the way to Wolcott for shipping every year. Livestock grazing use was unregulated until the Forest Service began issuing permits in 1905. In 1917, the first sheep were grazed in California Park and the 1921 General Land Office plat shows the Bears Ears and Sand Mountain Sheep Trail, and the Hahns Peak and Slater Park Trail crossing the park. Sheep were first officially permitted on National Forest around California Park in 1923. Ultimately, the Forest Service realized that its lands were inundated with livestock and in the 1920s began to seriously monitor the effects of grazing on the land.

The earliest records of permitted use date from the mid to late 1920s. Eight allotments were originally designated within the area now part of the California Park SIA. Management of the permits since 1923 has decreased the allotments to 7 and has substantially reduced stocking numbers of cattle and slightly reduced numbers of permitted sheep.

Homesteads and Cabins

Settlement in the area occurred in the late 1800s to the early 1900s. Most of the first settlers were trappers, followed by homesteaders and ranchers. Edward House's ranch is shown on the 1882 General Land Office plat just south of Elk Head Creek and another unnamed ranch is nearby. Historic maps depict many unnamed cabins and ranches in the park during the late 1800s and early 1900s.

A Mr. Adams was a hide hunter operating in Slater Park in 1886. Settlers lynched him and his German partner because of their devastating hunting practices. Herbert Jones was a homesteader in 1910. He

opened a small country store and operated the Elk Head Post Office south of California Park. Mr. Jokodowski was a bachelor-homesteader that wintered in California Park in 1907. Neighbors remember him communicating across the park with flashing lanterns though by 1917 telephone lines were in the area. The remains of his cabin burned down several years ago.

Another homesteader in the area was Ed Knowles. His cabin still remains south of the California Park Guard Station. Brothers Dan, Chris, and Ira Stukey operated several sawmills and gold mines in the county and Stukey Creek was named after them. Early homesteaders are reported to have grown hay (timothy) in the California Park Area. The historic hay farming that occurred at the homesteads in the CPSIA has influenced the existing vegetation that is observed today. Keeping the historical use of the area in mind is important in understanding the existing condition of the area.

Knowles Cabin - 2003

These historical values are some of the resources identified by the CPSIA designation requiring the management guidelines ensure protection of these values. Ideally, all cultural resources in the CPSIA would be identified, recorded, evaluated for significance, and assessed for effects. Recommendations could then be provided for proactive management of significant sites, including scientific research, stabilization, maintenance, rehabilitation, and interpretation. Identification and assessment of cultural resources on federal lands is called for under the Routt National Forest Land and Resource Management Plan in Appendix B: National and Regional Policies; Section 110 of the National Historic Preservation Act of 1966 [P.L. 89-665 (October 15, 1966)]; Executive Order 11593 [30 CFR 8921(May 13, 1971)]; and Executive Order 13287 [68 CFR 10635 (March 5, 2003)].

Management Implementation Guidelines – Historical Values

To preserve, manage, study, and interpret cultural resources they must first be located, recorded, and evaluated for significance. Prior to field survey, historical research should be conducted to provide a context to assist in identifying and evaluating historical sites. Cultural resources shown on historic maps or reported by others, such as the old California Park Guard Station and Jokowdowski cabin, can be recorded without extensive surveys, but field survey is the only way to find unknown sites. During the recording process, archaeologists should also assess site condition and potential threats, and recommend future actions to preserve, manage, study, and interpret significant heritage resources.

Goals

- Identify, record, preserve, manage, study, and interpret historical resources in the CPSIA.
- Promote public understanding of the CPSIA historical resources.

Management Implementation Guidelines

- Comply with cultural resource laws. Design and implement management actions to avoid impacts to important heritage resources.
- Eliminate potential impacts and threats to important historical resources.
- Locate, identify, record, evaluate, assess, preserve, manage, study, and interpret historical resources in the CPSIA.

Opportunities

- Prepare historical contexts for the CPSIA, using histories, cultural resources records, archival records, oral histories, the reported site records, and consultations with tribes tied to the park. Synthesize the information to provide a basis for finding sites, evaluating their significance, and interpreting them for the public.
- Record known sites in the area that are not yet recorded, including the old location of the California Park Ranger Station, Jokowdowski cabin, and the Old Beef Trail. Assess site condition and potential threats, and recommend future actions to preserve, manage, study, and interpret significant heritage resources.
- Conduct cultural resource surveys in California Park to find unknown sites, such as American Indian archaeological sites. More of these sites need to be identified and studied so the human past and use of the area can be understood and interpreted to the public. Assess site condition and potential threats, and recommend future actions to preserve, manage, study, and interpret heritage sites.
- Stabilize important heritage sites to prevent loss of non-renewable resources and to preserve them for future study and interpretation.
- Standard procedure for RNF cultural resource surveys generates GIS coverages of cultural resources. An analysis of the GIS and other information gathered should be undertaken to provide a synthesis of the prehistory and history of the area, identify research questions and future needed work, and provide new information for interpretation.
- Interview people who participated in the historical life of California Park to document these oral histories.
- Encourage scientific study of cultural resoruces in the CPSIA.
- Interpret historic and prehistoric sites in the CPSIA even if they are not eligible to the NRHP, because the public is often still interested and interpreting less important sites helps better preserve significant sites for scientific study of the human past. Specific options include developing a hiking trail to Knowles Creek Cabin along the old closed road and designing a brochure on the history of California Park's homesteads, stock trails, and other cultural resources.

Scenic Values

The scenery in and around the California Park Special Interest Area is one of the reasons the area was designated as a Special interest Area. The CPSIA is a unique high elevation sagebrush park surrounded by mature aspen forests. Forest road 150, running throught he CPSIA is designated as a 4.2 scenery management prescription area (Figure 2, page 8). This additional management area designation within the SIA was established to ensure the appropriate management of the scenic resouce.

Aspen was identified as particularly important in the California Park SIA for its scenic value. The aspen stands in the California Park SIA include some of the largest diameter aspen trees on the forest, some of the most extensive aspen clones. The forests are extensive and surround the majority of the open parklands. The SIA aspen stands are a scenic resource treasured by the public. The colorful displays of the fall leaves and changing colors brings people from all over the country to the California Park SIA.

Aspen stands in the area have the potential to be either relatively stable or in a successional stage to climax as conifer stands (Mueggler, 1988). It appears that both situations are occurring in the area. Aspen in the CPSIA is declining in some areas due to succession to conifer and browsing of young regeneration by wild and domestic ungulates. An aspen push (designed to regenerate aspen stands) was conducted on approximately 20 acres east of Knowles creek in 1992. Browsing by wild and domestic ungulates eliminated all regeneration stimulated by the management action and hence converted the aspen stands into upland openings.

In addition to the scenic value of aspen, the aspen forests surrounding the CPSIA are very important to many wildlife species including the greater sandhill crane. The aspen forest ecosystem supports a high level of biodiversity and is a critical habitat type for many species of migratory songbirds. The aspen stands in the California Park SIA are home to the only known nesting colony of purple martin (*Progne subis*) on the Routt National Forest. These cavity nesting birds are classified as a Forest Service Region 2 sensitive species and are declining across their range.

The Forest Plan has additional direction in regards to aspen management as follows:
Biological Diversity
Guideline 1. Maintain aspen, even at the expense of spruce/fir or other late-successional stands.

Management Implementation Guidelines – Scenic Values

Goals

- Promote successful regeneration of declining aspen clones.

Management Implementation Guidelines

- Maintain and improve the aspen forests in the CPSIA
- Promote public understanding of the unique high elevation parks in the CPSIA.

Opportunities

- Use prescribed burning in declining aspen stands to regenerate aspen.
- Adjust management to reduce ungulate impacts to regenerating aspen stands.
- Look at opportunities to regenerate declining aspen stands.
- Consider the use of temporary fencing to protect regenerating aspen stands.
- Evaluate the existing condition of aspen forests in the CPSIA.
- Evaluate change in the CPSIA aspen stands by review of historical aerial photographs.
- Identify climax and successional aspen stands.
- Create an interpretative display to educate the public on the unusual high elevation parks in the CPSIA.
- Evaluate if the 4.2 management prescription area designation in the CPSIA is necessary with a scenery management emphasis incorporated into the CPSIA.
    - Consider a nonsignificant Forest Plan amendment to dissolve this prescription designation and convert to 2.1 SIA designation.
- Monitor the aspen community type to help quantify changes in aspen stand presence and aspen understory characteristics. Aspen monitoring should include permanent transects and photo points.

General Goals and 'Other' Opportunities

This section of the management plan was developed to identify the Goals, Management Implementaiton Guidelines, and Opportunities that were developed in the working group process. This 'Other Opportunities' section was developed because some goals and opportunities are more general pertaining to larger issues in the SIA and do not clearly fit within the contecxt of an SIA special interest value topic.

Management Implementation Guidelines – General Goals and 'Other Opportunities'

Goals

- Maintain elk population numbers that are consistent with the capability of the area to provide habitat for nongame species, SIA value focus species as well as forage for livestock without compromising resource objectives.
- Improve hunter success and satisfaction by retaining elk on National Forest during hunting season.
- Continue to involve the individuals and groups who have commented on the management actions occurring in the California Park area during scoping efforts.
- Develop a comprehensive interpretative plan for the California Pak SIA.

Management Implementation Guidelines

- Road and access management proposals should be developed in close coordination with district recreation specialists.
- Provide ample public opportunity to comment on actions proposed for implementation within the CPSIA as a result of the management plan.

Opportunities

- Develop an action plan with goals for short term and long term action.
- Develop a mechanism for evaluation and updating the California Park Management Plan.
    - Hold an annual meeting of the California Park working group to review, comment and evaluate the Management Plan.
- Conduct follow-up monitoring on all land management actions to evaluate if the action is successful in moving the condition towards the DFC. Align monitoring with Forest Plan monitoring.
- Work with the CSU extension office to test tarweed treatment alternatives.
- Reduce elk populations within the CPSIA.
- The CDOW will implement a limited archery and muzzleloading season for the California Park area (began in 2000), reducing early season elk movement to private land, and providing for the opportunity for improved elk harvest during the rifle season.
    - Continue the elk management regulations.
- Elk responses and movements will be monitored to determine success of alterations to management strategies and success of decreasing elk populations in the CPSIA.
- Consider closing or decommissioning roads providing excessive motorized access to elk and contributing to elk movement off of National Forest lands.
- Evaluate elk response to seasonal trail closures. Determine if closures are effective at keeping

elk on the National Forest during the hunting season.

- Evaluate the effects of the spring road closure to elk.
- Outline road concerns identified in the Elkhead and Slater Roads Analyses that are causing resources damage, and identify actions to minimize and mitigate negative impacts.
- Conduct utilization assessments for both livestock and wildlife forage use. This is necessary in order to quantify wildlife use before livestock enter the allotment; and to additionally quantify use occurring through the remainder of the season when both livestock and wildlife are present.
- Identify key riparian reaches where long term quantitative monitoring will be conducted. As management changes are made to achieve desired conditions, such monitoring will be necessary to more accurately determine the trend of riparian conditions. Such monitoring should include permanent transects and photo points.
- Develop scoring method for rangeland and riparian seral stages.
- Determine changes in the hydrologic regime through an analysis of nearby USGS stream gauge data.
- Conduct stream bank surveys to determine the extent of unstable banks and potential rehabilitation measures.
- Develop allotment management plan for the California Park Allotment that incorporated the Management Implementation Guidelines developed for the SIA.
- Determine the pros and cons of designating the CPSIA as a State Natural Area.
    - Contact the Natural Areas program and initiate the designation process.
    - Improve management of the state section of land within the CPSIA.
    - Mark the boundary of the state section of land.
    - Evaluate the potential of converting the state section of land to Federal ownership.
- Develop a comprehensive interpretation plan for the California Park SIA. This would require a commitment of funding and personnel time, and would be best accomplished with the help of an interpretive specialist.
    - Get partners to help us in this area.
    - Educate recreationists on the California Park SIA values, and positively encouraged people to respect and protect these values.
    - Evaluate the interpretative opportunities of the California Park Guard station.
    - Emphasize attractive and effective information, education and interpretation displays at key locations, focusing on the Special Interest Area values.
    - Present accurate information on regulations and restrictions intended to protect the SIA values.
    - Appropriately sign, number and maintain all Forest Development Roads in the SIA to their designated level, according to Road Management Objectives.
    - Develop current, attractive and informative trailhead displays.
    - Promote public understanding and support for the CPSIA management plan inorder to protect the special values of the area.
- Adequately sign and maintain trail 1144.
- Ensure signs throughout the management area are well maintained and conform to current standards.
- Inventory and monitor dispersed campsites.
- Evaluate the potential of renting the California Park Guard Station as a base for recreation and interpretive opportunities throughout the summer, fall and winter.
- Rehabilitate dispersed campsites prior to degeneration beyond acceptable standards.

- Implement strategies to reduce or eliminate off-road motorized vehicle violations.
- Develop and maintain parternships to maintain and mark snowmobile access routes.
- Develop strategies to maintain the good opportunity for solitude in the CPSIA.
- Develop a strategy to ensure adequate state and federal agency presence for a high level of public service and resource protection.

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Greater Sandhill Crane
Habitat Management Plan

Routt National Forest

Prepared By Richard E. Enriquez Date 8-30-79

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Staff Officer

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Forest Supervisor

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PREFACE

This plan outlines the various tasks which must be accomplished to affect the population of Greater Sandhill Crane in Northwest Colorado. While the plan may appear ambitious, there are three priority programs which must be funded and implemented to increase the population of sandhill cranes. These programs include: 1) Monitor the existing wild populations; 2) Protection and enhancement of existing habitat; and 3) An information and education program to educate the public of the plight of the sandhill crane and obtain support for recovery efforts.

ACKNOWLEDGEMENTS

The writer wishes to express appreciation to the following consultants who provided valuable biological information: Walter D. Graul, Diane Blake, Kathleen A. Bieniasz, John Sundberg, Jim Webb and Sam Scanga.

ABSTRACT

The goals of this Management Plan is to affect a population increase of the species in Northwest Colorado. The Plan includes an account of the sandhill crane's history, biology, present status, and the adverse factors which may cause a decline in the population. The necessary actions are stated in a step-down outline and described in a narrative section. Implementation of the plan will be the responsibility of the State and Federal agencies. A schedule of their estimated costs is provided.

In essence, the Plan calls for the direct protection of sandhill cranes and their habitat.

The cranes belong to the Order Gruiformes, Subordèr Grues, Superfamily Guroidea, Family Guridoe. The family is divided into two subfamilies, one of which is the Gruinae, comprising the genera Grus. There are ten species in the genus Grus. Two species, americana and canadensis breed in North America.

The greater sandhill crane is a large long-legged and long-necked bird.[1/] Adults are gray in color with an unfeathered, bright red forehead, while juveniles are rusty brown color and have a feathered head. The greater sandhill cranes have a body length of 40 to 48 inches, and weigh approximately 12 pounds.

The greater sandhill crane (Grus canadensis tabida) is listed as an endangered state subspecies by the Colorado Division of Wildlife.

PREHISTORY

Crane remains have been found from the Eocene period.[2] There are fossil remains of *Grus canadensis* from the Pliocene of Nebraska and from the Pleistocene of California, Florida, Wyoming, and Nebraska.[3] In kitchen middens not more than 500 years old, crane remains have been identified as follows: *Grus canadensis*, Turkey Tank and Wupatki Pueblo, Arizona.[4]

Subfossil eggs, probably *Grus canadensis*, estimated to be a thousand years old, were found at Lake Texcoco, Valle de Mexico; the conditions under which the eggs were found and the known change in the climate of the region make plausible the supposition that the sandhill formerly nested there.[5]

EARLY HISTORY

The Greater Sandhill Crane was formerly found throughout southern British Columbia, south and central Alberta, Saskatchewan, southern Manitoba, through Washington, Oregon, northeastern California, northern and western Nevada, Arizona, northern Utah, Idaho, Montana, Wyoming, northwestern Colorado, the Dakotas, central Nebraska, Minnesota, northern and eastern Iowa, Wisconsin, and southern Illinois; Michigan to central Indiana and central Ohio; and the area in Ontario along Lakes St. Clair and Erie. Lewis and Clark, during their trip across the continent, found the sandhill crane abundant near what is now Idaho County, Idaho, in 1806.

The sandhill crane disappeared (most rapidly between 1870 and 1915) from many of the areas, with the increase of human populations, which hunted over, drained, and built on the cranes nesting areas. The sandhill does not now nest in the southern portions of any of the Canadian Provinces except British Columbia. In the United States it still nests in Washington east of the Cascades and in southeastern Oregon, possibly in northeastern California, in certain areas in northern and eastern Nevada, northern Utah, southern Idaho, southwestern Montana, western Wyoming and northwestern Colorado.

When white man first discovered the American continent, the estimated Indian population north of Mexico was 1,150,000 of which 846,000 were in the area occupied now by the United States.[6/]

Three waves of migrating people crossed the western portion of the country during our early history: First, after the expulsion of the French in 1763; second, after the War of 1812 (into the Central States); third, between 1830 and 1848, when our boundaries were carried to the Pacific. In recent years, train, automobile, and airplane have accelerated the movement of people into remote areas.

This increase and spread of human populations greatly affected the crane populations because of the bird's size, loud voice, and palatability.

Cranes bred in Nebraska until about 1884 and in Arizona until about 1910. They disappeared from such states as North Dakota, South Dakota, Nebraska, Iowa, from eastern Montana, and the southern portions of such provinces as Alberta, Saskatchewan, and Manitoba when the human populations of these areas were still very low. They still breed in well-populated areas of Wisconsin, Idaho, Oregon, and even in Michigan (within 50 miles of Detroit, for example), where the human population is above five million.

It is clear, then, that the disappearance of the Greater Sandhill Crane was not always consequent upon the increase of human populations, even though the species was universally considered game until a few decades ago and is still hunted in some areas. Its size, palatability, and loud voice

have contributed to the decline of the subspecies, but its protective color, wariness, long life, good vision, and love of large remote marshes have nevertheless preserved it. The prairie and plains areas, which the cranes deserted when the human populations there were still small, lacked one of the characteristics of other crane marshes: The isolation produced by mountain ranges, woodland, and water. On the plains, isolation was merely a matter of distance; the grasses and sedges of the marshes, which human vision was readily able to penetrate, were the only cover.

FORMER AND PRESENT POPULATION STATUS IN COLORADO

The first record of sandhill cranes in Colorado was a report of a crane killed in 1822 in the San Juan Mountains.[1/] In the following years the birds were regularly noted throughout the mountain parks of Colorado, but as the human population increased, the crane population declined. By 1947 only thirteen cranes remained in the state.[7/] Forty-one birds were reported in 1961. Since that time the cranes have shown an upward trend in numbers. In 1973 the resident population of the greater sandhill crane was classified as endangered by the Colorado Division of Wildlife. The fall staging ground census for 1976 estimated a maximum population of 250-275 greater sandhill cranes. This population is dispersed through the mountain parks of Routt and Jackson Counties, primarily in the California Park and Hahn's Peak areas.[8/]

The present breeding population level is estimated to be 76 pairs (4 pairs - Moffat Counbty; 6 pairs - Jackson County; 66 pairs - Routt County.)[9/]

MORTALITY FACOTRS

Like other birds, the sandhill crane is subject to disease, predation by man and other animals, to fire and drought, and to temperature extremes.

Little is known of disease in relation to the sandhill crane. Limberneck (botulism, according to veterinarians) caused the death of many cranes back in the 1940's. Tuberculosis, enteritis, and aspergillosis are causes of crane deaths also. A number of species of cranes have died from chicken cholera.

On the breeding area of the crane, there are foxes and coyotes as well as a few bobcats. No doubt these predators cause a few losses, but cranes are able to attack foxes and coyotes, and the wet marshy land in which the cranes nest is good protection against such enemies. According to fox trappers, red foxes will walk a mile to avoid crossing water.

Crows and ravens will cause damage if the eggs are left exposed. Raccoons frequently prey on the eggs of the greater sandhill crane.[10/]

Archie V. Bull (letter of 1941) reported that coyotes were the crane's worst enemy at Red Rocks Lake Refuge, Beaverhead County, southern Montana, killing the young when they left the wet nesting areas. Drewien (1973) cited an example of an incubating male crane being attacked and eaten by a golden eagle.

Accidents, such as hitting power lines, have also caused death.[11/]

Although cranes are prtoected by law, a few are shot annually. Hunting of the sandhill crane was prohibited in the U.S. from 1916 to January 1961, when a thirty day season on lesser sandhill cranes in eastern New Mexico was opened. Cranes are still a food item for Eskimos in northwestern Alaska and northern Canada.

In 1968 hunting began in western Oklahoma and the eastern panhandle of Texas. Annual hunting harvests in New Mexico, Texas, Saskatchewan and Manitoba are estimated to equal two percent of the migrating population of lesser sandhill cranes.

Shooting was probably the greatest factor in the reduction of the greater sandhill crane population. Regarding this point, the birds cannot tolerate more than a 5-10% harvest, since they only produce two eggs per nest and a given pair usually only raises one chick per season. Shooting is no longer a serious danger to the greater sandhill crane, but human intrusion on the nesting area causes the desertion of many nests, even when young are present.

HABITAT AND FOOD REQUIREMENTS

Nesting habitat consists primarily of large marshes and willow-lined drainages of mountain meadows. In Colorado, these birds nest mainly along the mountain meadow drainages up to 8500 feet, but a few nest along the Yampa River.

Nesting birds are found only in portions of Moffat, Routt, and Jackson Counties. In Moffat County they nest just southwest of Craig along the Yampa River in the area known as Big Bottom. This area constitutes about two miles of the Yampa River, starting immediately west of the bridge on Highway 13. This area is also used as a spring and fall staging area.

The Jackson County nesting population is located in the southwest corner of North Park. They occupy portions of the following drainages: Chedsey Creek, Little Grizzly Creek, Doran Creek, Colorado Creek, and Grizzly Creek (east of Van Valkenburg Reservoir). This entire area is encompassed by the following boundary: Starting at Hebron, west 9 miles to the border of the forest, south along the forest boundary 11 miles, east 5 miles to Highway 14, northeast along Highway 14 to Hebron.

Key staging and feeding areas within the above boundary have not yet been determined. Paired adults also have been observed in the southeast corner of North Park (Michigan River north of the Ranger Station and Silver Creek) during the summer, but nesting in this area has not been confirmed.[97]

The Routt County nesting area can be described in two blocks: (1) North of Highway 40 - starting at the point where Highway 40 crosses the Continential Divide (Rabbit Ears Pass), north along the Divide to the Colorado-Wyoming line, west along the state line to the Routt County - Moffat County line, south along the county line to Highway 40, and east along the highway to the starting point, and (2) south of Highway 40-from Hayden south on the county road to where it ends at the county road that runs from Pagoda southeast, along the latter road, into the White River National Forest, to Phippsburg, south on Highway 131 to Highway 134, east on Highway 134 to the Continental Divide (Gore Pass), north along the Divide to Highway 40, back west to Hayden on Highway 40. Within the above areas, nests are located on mountain meadows below 9500 feet that are not settled heavily by people.[97] The exact drainages within the above areas where nesting has been confirmed are listed in Appendix 1.

The following areas are the habitats required to maintain the present breeding population.

Within the Big Bottom area of Moffat County, all land within one-half mile of the Yampa River from the Highway 13 bridge downstream two miles.

Within the habitat boundary described for Jackson County, all land within one-quarter mile of any segment of a willow-lined drainage that carries water through June and that is in a relatively open area.

Within the boundaries described for Routt County, habitat consists of those areas that meet all of the following criteria: (1) below 9500 feet, (2) within one-quarter mile of any segment of a willow-lined drainage that carries water through July and that is in a relatively open mountain meadow situation, and (3) human activity already has not rendered the area unsuitable as crane nesting habitat.

In conjunction with nesting habitat there are key staging areas where the birds of a given nesting area gather each spring and fall. Such areas are characterized by being near water and abundant food supplies. These sites are especially important in that they are characterized by traditional use. Presently, the existing staging areas associated with agricultural practices. They are located along large river bottoms with small grains (primarily wheat) adjacent to the water areas. These river bottoms are made even more attractive by the presence of irrigated hay fields in the fall. Like nesting areas, human disturbance must be at a minimum on the staging areas. Spring staging occurs between March 15 and April 25 each year. Fall staging takes place between August 15 and October 10 each year.[9/]

Water is essential at all seasons; and cranes regularly resort to marshes and small marshy streams. However, in mid summer they are sometimes found with their young some distance from water; possibly when they are feeding chiefly on insects and berries, they require less water than when they eat grain. The greater sandhill crane feeds extensively on vegetable food, eating roots, bulbs, grains, berries, etc. as well as insects, frogs, lizards, snakes and mice.[12/] Also, they apparently need drainages with beaver activity, since they prefer to nest on old beaver dams.

The key limiting factor in such areas is the lack of human disturbance.

Sandhill cranes are very intolerant to human intrusions near their nest during the first one-half of the incubation phase-through mid-May. It seems very unlikely that they would tolerate humans near the nest more than once or twice in this early period. Later, they might be able to tolerate more disturbance, but anything over being disturbed at the nest twice a week might cause them to abandon. Once the chicks have hatched, they could probably tolerate humans on their territory more frequently, as long as the intrusions are not of a prolonged nature.

With the above in mind, they will probably only continue to do well in areas where there is minimal human activity prior to July 1. So, any major increase in human activity early in the season may cause a decrease in the population in specific parks. Beyond this, it is hard to be more specific. The overall problem will be wherever and however you increase public access early in the year - road improvements in conjunction with timber sales, etc. may become a problem.

Timber activities, or other activites, near the nesting areas in the incubation period (through June) could cause desertion. For instance, the occasion in California Park where work was being done on a sign in May 50 yards from an active nest. Since you never know where all the nests are located, it would be best to avoid activities along known nesting drainages until July 1. Timber harvest per se is not a major concern because the cranes don't require trees - they are tied to the willow drainages and adjacent park areas for survival.

Figure 1. Adult Sandhill Crane.

Figure 2. Sandhill Cranes in Flight.

Figure 3. Clutch of Two Crane Eggs Surrounded by Tall Growth.

Figure 4. Sandhill Crane Chick.

Figure 5. Summer Habitat in California Park.

Figure 6. Staging Area Where Cranes Gather Each Spring and Fall.

Description of Planning Procedures

The step-down planning technique used to develop this plan involved the establishment of a precise problem statement, the Prime Objective. Intermediate and lower echelon objectives must be accomplished to attain the Prime Objective. The lowest echelon objectives are usually the specific jobs or tasks to which budgets and manpower requirements are assigned.

The following summarizes the sequence which was followed in developing the plan:

(1) From the facts at hand, establish one simply stated, single purpose, primary objective that communicates the identity, nature, and depth of the problem. (This is the Prime Objective).

(2) Derive a second echelon of items that will accomplish the first.

(3) Derive a third, fourth, etc. echelon of items.

(4) Continue the logical derivation of subordinate objectives until terminal items are reached; that is, items recognizable as actions which can be performed, or items whose paths to solution are not immediately evident from existing knowledge or technology. The terminal items are tasks or jobs to be accomplished.

(5) Re-examine the plan to determine that the composite attainment of each item, beginning with the terminal items, will build back to accomplish the primary objective.

(6) Re-examine the plan to determine that each item is necessary to the accomplishment of the primary objective.

STEP-DOWN PORTION OF GREATER SANDHILL CRANE MANAGEMENT PLAN

Prime Objective: Increase tabida sandhill crane populations in northwest Colorado to a minimum of 60 effective breeding pairs* by 1990.

1. Determine, maintain and protect existing and potential habitat for population continuance and expansion.

11. Determine habitat.

111. Identify nesting habitat, including feeding areas.

1111. Analyze and monitor presently-used nesting locations and the surrounding area. Get details on specific nest site locations.

11111. Evaluate physical parameters of each active nest site.

11112. Evaluate physical parameters of each active nest site.

11113. Determine disturbances occurring at each nest site and establish tolerances.

* Effective breeding pair: A male and a female adult greater sandhill crane that successfully produce and fledge offspring in the wild state.

1112. Determine, analyze and monitor areas formerly used by breeding cranes and identify presently favorable areas.

1113. Locate analyze and monitor previously unknown nesting sites.

1114. Locate and evaluate potential nesting sites.

112. Identify non-nesting habitat. Low priority item for the present time.

1121. Initiate research to determine location and related habitats utilized by non-breeding cranes during the breeding season.

1122. Identify habitat used by migrating cranes.

11221. Determine migration patterns and chronology.

11222. Locate and analyze feeding and resting areas.

1123. Initiate research to determine other habitat needs.

12. Maintain and upgrade suitable habitats to insure they remain attractive to the cranes.

121. Monitor land use changes within occupied and potential sandhill crane habitat and respond to potentially unfavorable operations.

1211. Review pertinent Environmental Assessments.

1212. Review Governmental Land-Use Planning documents.

1213. Alert responsible agencies where adverse plans appear.

122. Eliminate unfavorable land-use activities and public disturbances of key habitats.

1221. Prohibit land-use practices and development which alter or eliminate the character of the habitat.

1222. Prohibit disturbances and human activities between May 1st and July 1 (crane nesting period). If necessary, restrict public access on Forest Route 150 between May 1-July 1.

123. Manage key habitat on private lands through purchase, exchange, lease or cooperative agreements.

124. Manage key habitat on public lands through agreement with responsible agencies.

125. Research and implement means of enhancing the physical attributes of nests and surrounding areas to improve habitat.

13. Provide protection of occupied and suitable habitat (key habit

131. Encourage enactment of appropriate State legislation for protection of habitat.

1311. Encourage adoption of a State Endangered Species Act or similar authority.

1312. Encourage adoption of a State Coordination Act or similar authority.

1313. Use State power of eminent domain.

2. Monitor productivity of breeding pairs.

21. Manage the population for maximum productivity.

211. Obtain accurate annual field data on nest occupancy and productivity.

212. Research and implement means of enhancing the physical attributes of nests and surrounding areas to increase production.

22. Protect greater sandhill cranes through implementation of legislation.

221. Implement State regulations.

3. Conduct Information and Education Programs designed to gain support for protection of and efforts to increase the sandhill crane population. Low priority at this time.

31. Develop and produce needed information and education materials.

311. Develop color brochures and posters.

312. Develop Auido-Visual Programs for loan to schools and local conservation groups.

313. Develop press release kits with photographs.

314. Develop hunter posters, leaflets and signs.

315. Develop public service ads.

316. Develop and provide audio-visual packets for use on televisi and radio.

317. Develop films on the greater sandhill crane.

32. Make the public aware of the sandhill crane, its plight, habitat needs and management efforts currently underway.

321. Provide printed and audio-visual material for dissemination by public agencies and conservation organizations.

322. Conduct public attitude surveys to determine effectiveness of this Information-Education program.

33. Make public agencies aware of sandhill crane identification, habitat needs, and management efforts currently underway and clarify agency responsibilities in the management effort.

331. Provide workshops for public agencies to inform them of their responsibilities and involve them in information-education programs.

332. Initiate, produce and disseminate a periodic newsletter.

Prime Objective: Increase tabida sandhill crane populations in northwest Colorado to a minimum of 60 effective breeding pairs by 1990. (Bears Ears Management Plan directs that FS maintain 60 nesting pair, Routt County).

In 1977, 17 breeding pairs of birds were located within the Forest with a total of 33 eggs. Eight chicks were known to have successfully hatched from 24 eggs at 12 nest sites checked in late June, a hatching success rate of 33 percent. At fledging time, only six of these chicks could be located suggesting a chick survival rate of 25 percent.

Based on these findings, it is estimated that a minimum crane population of 60 effective breeding pairs exhibiting a minimum mean annual hatching success of 33 percent or chick survival rate of 25 percent will represent a major step toward this population's recovery. It must be recognized, however, that this trend may not be equally successful in all areas.

When the Prime Objective is reached or significant new data are obtained, the status of the area's crane population and its dynamics will be reassessed to determine if the Prime Objective of the Management Plan needs to be changed, or if reclassification is warranted.

1. Determine, maintain and protect existing and potential habitat for population continuance and expansion.

Delineation and protection of the sandhill crane's habitat are basic steps toward eventual protection of the species. A great deal still needs to be learned about the crane's nesting distribution, and how many pairs ar nesting. Much effort will have to be devoted to establishing habitat parameters. When nesting sites are located, they will be monitored to determine nesting success and continued occupancy. Only after the above information is compiled can protective measures by implemented.

11. Determine essential habitat.

Habitats essential to the continued existence of sandhill cranes fall into three categories, nesting, staging and migration (Appendices 1 & 2) The nesting areas primarily consist of large marshes and willow-lined drainages of mountain meadows in close proximity to streams. The nesting areas also include the adjacent feeding areas which support the breeding pairs and their young. Staging areas generally include migration areas, areas where both the breeding and non-breeding birds gather each spring and fall.

111. Identity nesting habitat, including feeding areas.

Each nesting area is composed of the nest site itself and associated foraging areas utilized by breeding pairs to sustain themselves and their offspring. Any measures to protect nesting areas must also be directed toward key feeding areas as well.

1111. Analyze and monitor presently-used nesting locations and the surrounding area.

Criteria must be established and refined to assist in the determination and eventual protection of nesting sites and adjacent feeding areas. Nest sites which were active within the past two years will be inspected and essential factors established. Helicopter surveys every year or so would be the most efficient, with flights in mid-May. The development of a list of factors which are essential to occupancy of sites by breeding pairs also will provide assistance in evaluating the suitability of unoccupied areas as well as determining potential production sites.

Since different agencies and individuals will undoubtedly be involved, uniformity must be maintained when gathering data used in analyzing nesting locations. This requires that particular instructions be provided to investigators. Upon completion of examination of nesting sites, copies of the pertinent data should be provided to the agencies involved. From this data, a list of factors will be compiled to assist State and Federal agencies in the evaluation of potential nesting habitat.

Jobs 11111 (Evaluate physical parameters of each active nest site), 11112 (Evaluate physical parameters of each active nest site) and 11113 (Determine disturbances occurring at each nest site and establish tolerances) can all be accomplished concurrently.

While the Forest Service has overall responsibility for coordinating this plan, the State Wildlife agency will coordinate this task to assure that uniformity is maintained, and in addition, will be responsible for surveying non-federally administered lands. Land management agencies will be responsible for surveying nests on lands under their administration.

11111. Evaluate physical parameters of each active nest site.

Active and recently occupied sites should be investigated to establish those physical parameters common to all sites. Among those factors which should be recorded are: topography, altitude, climate, soil and vegetative types, presence of and distance to water, nest height, presence of alternate nest sites, possible predators, human activities occurring within the immediate vicinity of the site, and interspecific interactions.

11112. Evaluate physical parameters of each active nest site.

Due to the mobility of sandhill cranes, an area of approximately 1 mile from each active nest should be surveyed to establish potential and actual areas occupied by breeding adults and later by the chicks. Factors which will be designated are: location and distance of key feeding area, vegetation types throughout the area, topography, presence of physical features which isolate or make them vulnerable to predators, climatic factors, and interspecific competition.

1111. Determine disturbances occurring at each nest site and establish tolerances.

Human activites, visual and audio disturbances, and land use practices should be determined at nest sites and within 1 mile of the nests. Breeding pairs should be observed to determine reactions to potential disturbances in order to establish tolerance levels.

1112. Determine, analyze and monitor areas formerly used by breeding cranes and identify presently favorable areas.

It is important for breeding pairs to reoccupy formerly used nesting areas. The criteria developed in Job 1111 will be used to assess the suitability of unoccupied sites. These sites will be monitored periodically, since they may be reoccupied in the event of a population expansion.

1113. Locate, analyze and monitor previously unknown nesting sites.

There are alot of areas throughout northwest Colorado that have not been surveyed to date. Investigations to locate potential nest sites (Job 1114) and efforts to locate new sites will undoubtedly provide sites previously unknown. The newly located sites will be evaluated as in Job 1111 and productivity ascertained.

1114. Locate and evaluate potential nesting sites.

Some historic nesting sites are uninhabited because of hu encroachment and habitat alteration. Habitat, unoccupied but potentially suitable for occupancy by breeding pairs, will be surveyed and evaluated through criteria in Job 1111.

112. Identify non-nesting habitat.

The resident crane population could be classified into two categories, breeders and non-breeders. Breeding cranes are those that have known nest sites or recognizable territories. Non-breeding birds do not have nest sites and usually have ill-defined home ranges.

1121. Initiate research to determine location and related habitats utilized by non-breeding cranes during the breeding season.

Observations of non-breeding cranes are few; occasionally unattached cranes are sighted during the breeding season. Investigations will supply information about non-breeding activities and movements.

1122. Identify habitat used by migrating cranes.

Extent, duration and routes of migrating tabida cranes ar 11
documented. Use of plastic leg bands should aid in ident-
cation of migration areas.

11221. Determine migration patterns and chronology.

Migration patterns and chronology will be established through the compilation of sightings of banded individuals.

11222. Locate and analyze feeding and resting areas.

Habitats which are habitually utilized by migrant cranes (located and followed by techniques described in Job 11221 are well documented. Key areas should be managed for preservation to assure continued usage by migrants.

1123. Initiate research to determine other habitat needs.

Some information is available about habitat needs of non-nesting cranes and additional habitat requirements may be discovered; thus, effort should be directed toward establishment of these additional requirements.

12. Maintain and upgrade suitable habitats to insure they remain attractive to the cranes.

It is recognized that habitat loss was among the factors causing the crane's decline; therefore habitat preservation is essential to maintain or reestablish the crane. Because some of the presently unoccupied habitats are unsuitable for reoccupancy by sandhill cranes, it will be necessary to protect and upgrade other habitats so that population expansion can take place.

121. Monitor land-use changes within occupied and potential sandhill crane habitat and respond to potentially unfavorable operations.

Proposed detrimental habitat alterations or land-use practices within essential habitats (Job 11) will have to be eliminated where feasible. The most effective method of determining unfavorable habitat alteration is to review pertinent Environmental Assessments (Job 1211) and Land-Use Planning documents (Job 1212). If such plans are proposed for public lands, the appropriate agencies must be notified (Job 1213).

122. Eliminate unfavorable land-use activities and public disturbances of key habitats.

After the unfavorable land-use practices and adverse disturbances have been identified, steps should be taken to reduce or eliminate those practices. The protective measures implemented will depend on the type of disturbance or habitat alteration and the habitat affected.

1221. Prohibit land-use practices and development which alter or eliminate the character of the habitat.

A survey of all suitable historic, currently active or potential nest sites will need to be conducted, and key feeding

areas and disturbances will be established (Job 1111). Practices which would reduce the numbers, distribution or availability of habitat should be prohibited. Permanent disturbances, such as developments or other human activities, should be prohibited. This may include special closures and appropriate signing and administration.

1222. Prohibit disturbances and human activities between May 1 and July 1 (crane nesting period). If necessary public access on Forest Route 150 should be restricted during the nesting period.

To restrict disturbance during crane nesting period, human activities should be prohibited.

123. Manage key habitat on private lands through purchase, exchange lease, or cooperative agreements.

Consideration must be given to the protection of sandhill cranes utilizing private property. The obvious way to gain control of these privately owned habitat areas is through binding agreement, lease, exchange or purchase. The appropriate State agencies will be responsible for negotiating with the respective landowners. The CDOW is working on this.

124. Manage key habitat on public lands through agreement with responsible agencies.

On occasion, certain beneficial activities may be encouraged on public lands through agreement with the administering agencies. On public lands, the land management agencies will be encouraged enter into cooperative agreements with respective State Wildlife Management agencies for the management of key habitats. These cooperative agreements would provide for a jointly developed Habitat Management Plan.

125. Research and implement means of enhancing the physical attributes of nests and surrounding areas to improve habitat.

Manipulation of nesting areas through association with beaver activity may be necessary to assure utilization by a pair of cranes (the cranes apparently need drainages with beaver activity, since they prefer to nest on old beaver dams).

13. Provide protection of occupied and suitable habitats (key habitat).

To insure a future for the sandhill crane, various protective measures must be taken to safeguard occupied and suitable nesting sites.

131. Encourage enactment of a apropriate State legislation for protection of habitat.

Encourage the State to maintain legislation allowing them to totally manage their wildlife resource.

1311. Encourage adoption of a State Endangered Species Act or similar authority.

The State of Colorado has recognized the need for laws similar to the Endangered Species Act to more fully protect the species and their habitats. With the passing of the State Non-Game and Endangered Species Act by the legislature in 1973, responsibility for protection and enhancement of this species has been charged to the Division of Wildlife.

1312. Encourage adoption of a State Coordination Act or similar authority.

Coordination of the activities of the State agency is necessary to prevent further detriment to essential crane habitat as well as wildlife habitat in general.

1313. Use State power of eminent domain.

It may be necessary for the State to invoke the power of eminent domain in extreme cases where negotiation for the protection of active habitat sites has failed.

2. Monitor productivity of breeding pairs.

Increased survival of chicks and subsequent recruitment to replace or expand the breeding population is essential for attainment of the Prime Objective.

21. Manage the population for maximum productivity.

Continue with efforts to minimize or eliminate detrimental impacts which would reduce productivity.

211. Obtain accurate annual field data on nest occupancy and productivity.

Essential to any management plan is the need to monitor the reproductive success of the population to ascertain results of the management efforts. An initial indication that management efforts are successful is the occupancy of suitable nesting sites. Active sites will be inspected annually by the State or Forest Service to ascertain reproductive vigor of the nesting pair. The active sites will be the first surveyed in Job 1111.

212. Research and implement means of enhancing the physical attributes of nests and surrounding areas to increase population.

As more details are obtained through Jobs 11111, 11112, and 125, certian techniques will be suggested to improve physical attributes of specific sites.

The following are examples of activities which might be undertaken to improve nesting success.

(a) reduce or eliminate human activities or other disturbances which preclude use of nesting areas by sandhill cranes.

(b) Provide nesting areas as a result of beaver activity. Increasing water availability by providing impoundments, marshes, sloughs may increase nesting activity.

22. Protect greater sandhill cranes through implementation of legislation.

In addition to protection of active, and suitable nest sites, certain measures are necessary for the protection of the species itself.

221. Implement State regulations.

State wildlife regulations protect the sandhill crane, but the State doesn't have sufficient manpower to provide the protection neccessary.

Information and education programs designed to acquaint the public with the plight of the crane and efforts to restore it may be the most effective tool for protection in the long run. Public interest will generate support for the management effort and strengthen law enforcement measures.

The public will learn the reasons for restricting access to nesting areas, will respect this limitation during the nesting season and will assist in reporting intrusions into nesting areas.

A carefully and properly funded and implemented education program will benefit the sandhill crane.

3. Conduct information and education programs designed to gain support for protection of and efforts to increase the sandhill crane population.

People management will become one of the most important elements for management of the sandhill crane. A well-designed and executed public education program will shape agency and public opinion to assist in efforts to increase the sandhill crane population in northwest Colorado.

A good communication program will help solve some of the problems facing the sandhill crane through: reduction of human activity and disturbance in key production areas, and reduction of thoughtless shooting.

31. Develop and produce needed information and education materials.

The task of developing and disseminating newsletters, brochures, news releases, etc., will be done cooperatively with the Division. Due to time, budget and personnel constraints, it is not feasible to expect a public agency to take charge of such a program.

Definitive color folders describing the sandhill crane, including its identificaiton, a brief life history and management efforts underway will be printed in large quantities (on the order of 10,000 and distributed to public agencies to be made available to the public.

312. Develop Audio-Visual programs for loan to schools and local conservation groups.

Slide series and film strips will be developed for use in Conservation-Education Programs and will be made available to the public through loan from various public agencies. These programs will discuss the sandhill crane, its life history, habitat needs and activities underway to protect the sandhill crane. The programs also will include discussions on agency and public participation and support.

313. Develop press release kits with photographs.

Press kits (color slides or film for television glossy photographs and lead articles for newspapers) will be provided to the agencies.

314. Develop hunter posters, leaflets and signs.

It is essential that the shooting public be informed about the birds status, identification, and management efforts. Identification leaflets and fact sheets will be developed for distribution. Areas should be posted with identification posters and leaflets.

315. Develop public service ads.

Considerable benefits are obtained by furnishing public service advertisements to various magazine and newspaper publishers. These ads should be developed and furnished to a publisher to use when space is available in his publication.

316. Develop and provide audio-visual packets for use on television and radio.

Taped, one-minute spots will be prepared for television stations and appropriate State Information-Education Departments. Likewise, prepared tapes or scripts should be made available to radio stations.

317. Develop films on the greater sandhill crane.

A 16mm film will be produced with enough prints to allow rotation among television stations, as well as distribution to state and Federal agencies and Conservation Organizations. The film's theme will reflect the philosophy of the sandhill crane's management effort. It should be of "award winning" caliber to insure wide exposure.

32. Make the public aware of the sandhill crane, its plight, habitat needs and management efforts currently underway.

The success of the sandhill crane management effort depends upon public acceptance. Activities of public agencies must be supported by the public as a whole before the efforts expended will effectiv lead toward the increase in the sandhill crane populations. Various media must be utilized for an effective and successful public education program.

321. Provide printed and audio-visual material for dissemination by public agencies and conservation organizations.

While the public relations departments of many public agencies cannot afford the money or manpower necessary to develop the materials, most are eager to utilize those materials which are supplied to them. Therefore, well designed information packets, news releases, public service announcements, slide shows and films developed in Job 31 will be made available for their use whenever possible.

322. Conduct public attitude surveys to determine effectiveness of this Information-Education Program.

Ideally, a program of this scope will include a pre-campaign survey of the public attitude toward the cranes and non-game birds in general. After the program has been in operation for a year, a second campaign study will determine the influence the program has had upon public attitude. While the program can be conducted without the survey, this is the only true means of measuring its effectiveness.

33. Make public agencies aware of sandhill crane identification, habitat needs, and management efforts currently underway and clarify agency responsibilities in the management effort.

Responsibiliities for State Endangered Species and their essential habitat should be made clear to land managing agencies.

Many State Conservation agencies are concerned about possible usurpation of State's rights by Federal involvement in their wildlife species. Many well-intentioned efforts are likely to be viewed with suspicion and full State cooperation and can only be surmounted by fluent communication between all agencies.

331. Provide workshops for public agencies to inform them of their responsibiiities and involve them in Information-Education Programs.

Workshops will be developed to inform agency personnel about crane identification, recognition of essential habitat, and management of habitat.

Separate workshop will deal specifically with presentation of conservation programs to the public. Materials such

as brochures, information leaflets, photographs, slide series, and films will be made available and their application discussed.

332. Initiate, produce and disseminate a periodic newsletter.

It is important that all cooperators as well as interested parties be kept informed of progress made toward management of the sandhill crane. A newsletter format will be designed and mailing lists compiled. The newsletter would be mailed out at least bi-yearly and more frequently as activities neccessitate.

BUDGET

If, upon reviewing the budget or step-down portion of the plan, more information is required, please refer to the narrative section for the particular job. The narrative section serves primarily to provide justification for the budget and describe specific actions which are to be accomplished by each job. In several cases, jobs are combined to be accomplished concurrently and a budget is assigned to the entire group.

The budget has been broken into separate components for assignment of costs by responsible agencies. That amount which has been budgeted for the State Conservation agency, is the total cost for them to implement each job. The Forest Service will be expected to allocate their own funds to implement portions of the plan for which they are responsible. As more information becomes available, various portions of the budget will have to be revised.

Various jobs are ranked in order of priority for accomplishment and those jobs of equal importance are awarded the same priority ranking and should be undertaken concurrently.

Priority ranking and time frames for specific jobs may change from agency to agency. The budget has been developed only for those jobs which should be completed within five years after the plan is approved. The schedule as prepared will vary depending upon funding made available to the Forest Service and Division of Wildlife. Year 1 tentatively corresponds to FY1979.

The agency assignments within the budget were based upon the following assumptions:

1. State agency would fund tasks concerned with species management.

2. Forest Service would fund those tasks concerned with the protection and management of essential habitat on lands under their administrative jurisdiction.

ESTIMATED ANNUAL EXPENDITURE BY AGENCY

Agency	1979	1980	1981	1982	1983
Colorado Division of Wildlife	5000	1000	1000		
Forest Service	1500	1500	1500	4000	5500

PROSPECTUS

In Appendix 1, we list what we know about nesting disturbution. There is a definite need to confirm whether birds are nesting in the areas with a "P". We also need to determine how many pairs are nesting in the areas indicated with a "C". Additionally, we need to obtain better population data for the drainages coming off the north side of the White River National Forest - Trout Creek, etc. Furthermore, better information is needed on "how many and where" the cranes are in North Park. For instance, are there cranes nesting in the southeast corner of North Park.

We also need to consider a long-term, overall monitoring program to detect any population changes in key areas. Specifically, the California Park - Little Snake Drainage, and Elk River drainage areas would be a good example. Helicopter surveys every year or so would be the most efficient - flights in mid May. Alternatively, your people might be able to check known nest sites in these areas each spring.

Although we do not have precise information on the limiting factors for nesting factors for nesting cranes in this area, we do have some information. This information is given in the HABITAT AND FOOD REQUIREMENTS section of this document.

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APPENDIX I

The following is the list of drainages or areas where nesting has been confirmed (C) or, based on observations of birds in the summer, is extremely probable (P).

	(Possible Nesting Areas)
LITTLE SNAKE RIVER AREA	
Middle Fork	P
Independence Creek	P
Summit Creek	C
Smith Creek	P
Box Creek	C
Dudley Creek	P
Tennessee Creek	C
Bedrock Creek	C
King Solomon Creek	C
Whiskey Creek	C
Crane Park	C
South Fork	C
Lopez Creek	C
Johnson Creek	C
Willow Creek	C
SLATER CREEK AREA	
Grizzly Creek	C
ELKHEAD CREEK	C
First Creek	C
Second Creek	C
Jackodowski Creek	C
Circle Creek	C
Knowles Creek	C
Torso Creek	C
Armstrong Creek	C
ELK RIVER	
Deep Creek	C
Rock Creek	C
Reed Creek	C
Hinman Park	C
Hinman Creek	C
Red Creek	C
Mill Creek	C
Floyd Creek	C
Larson Creek	C
Dutch Creek	C
Willow Creek	C
Beaver Creek	C
Pearl Lake	C

YAMPA RIVER	
(above Steamboat)	
Harrison Creek	P
Green Creek	P
Pleasant Valley	P
(Steamboat to Hayden)	
Wolf Creek	C
Morgan Creek	C
Trout Creek	C
Morgan Bottom	P
(SW of Craig)	
Big Bottom	C
NORTH PARK	
Chedsey Creek	P
Little Grizzly Creek	P
Colorado Creek	P
Grizzly Creek	C

APPENDIX 2

ANALYSIS OF
GREATER SANDHILL CRANE USE OF
DRAINAGES IN COLORADO

key

c - common seasonally
o - occasionally present
u - status unknown
+ - indicates that more cranes are probably present
x - reported, but numbers not available
P - Possibly nesting
T - Areas traditionally used
SPR - spring (March -- May)
SUM - summer (May -- August)
FALL - fall (August -- October)

Digits under NESTING - STAGING - DANCING - FEEDING indicated numbers of cranes.

DRAINAGE	NESTING	STAGING	DANCING	FEEDING	MIGRATION	STATUS	YEARS FROM	YEARS TO	TIME OF YEAR PRESENT	EXTREME DATES
LITTLE SNAKE RIVER	-	-	15	2	-	u	72	74	SUM	
Middle Fork	P	-	-	x	-	u	73	74	SPR SUM	
Independence Creek	P	-	-	x	x	u	73	74	SPR SUM	
Summit Creek	2+	-	-	3	-	c	73	74	SPR SUM	
Smith Creek	P	-	-	x	-	u	74	74	SPR SUM	
Box Creek	6	-	-	6	-	c	67	74	SPR SUM	
Dudley Creek	P	-	-	2	-	c	72	74	SPR SUM	
Tennessee Creek	2+	-	-	1	-	c	73	74	SPR SUM	
Bedrock Creek	2+	-	-	6	-	u	72	74	SPR SUM	
King Solomon Creek	4+	-	-	2	-	u	69	74	SPR SUM	
Whiskey Creek	2+	-	-	1	-	u	74	74	SPR SUM	
Crane Park	4	-	-	5	-	c	00 T	74	SPR SUM	
Red Parks	-	-	-	2	-	u	60 T	73	SPR SUM	
South Fork	2+	-	-	x	-	u	73	74	SPR SUM	
Lopez Creek	2+	-	-	3	-	c	72	74	SPR SUM	
Johnson Creek	2+	-	-	2	-	u	74	74	SPR SUM	
Willow Creek (II)	2+	-	-	2	-	u	73	73	SPR SUM	
Gold Blossom Creek	2+	-	-	3	-	u	74	74	SPR SUM	
Cottonwood Park	4	-	-	2	-	c	72	74	SPR SUM	
Yellow Creek	-	-	-	-	2	u	74	74	SPR	
Mill Creek	-	-	-	1	-	u	73	73	SUM	
YAMPA RIVER										
above Steamboat										
Harrison Creek	2	-	-	-	-	u	71	72	SPR SUM	
Green Creek	2	-	-	-	-	u	71	72	SPR SUM	
Morrison Creek	-	-	-	5	-	u	72	73	SPR	
Steamboat--Hayden	P	100	-	15	x	c	74	74	SPR FALL	
Wolf Creek	-	-	-	2	-	u	71	71	FALL	
Grassy Creek	-	-	-	2	-	u	71	71	FALL	
Morgan Creek	2	-	-	-	x	c	71 T	74	SPR	
Selbe Place	-	55	-	55	-	c	73	74	FALL SPR	
Morgan Bottom										08-29-74
North of Yampa	P	170	-	170	-	c	61 T	74	FALL	10-26-73
South of Yampa	-	-	181	181	-	c	61 T	74	SPR	03-18-74
Hayden--Craig	P	x	-	x	-	c	73	74	SPR FALL	
Round Bottom	P	x	-	x	-	c	73	74	SPR SUM FALL	
Big Bottom	6	-	-	25	-	c	71	72	SPR SUM FALL	

DRAINAGE	NESTING	STAGING	DANCING	FEEDING	MIGRATION	STATUS	YEARS FROM		YEARS TO	TIME OF YEAR PRESENT			EXTREME DATES
ELK RIVER	2+	–	–	4	x	c	06		74	SPR			
Trull Creek	2	–	–	5	x	o	74		74	SPR	SUM	FALL	
Farnsworth Creek	–	–	–	x	x	o	74		74	SPR			
Salt Creek	–	–	–	2	x	u	74		74	SUM	FALL		
Deep Rock (I)	2	–	–	16	x	u	73		74	SUM	FALL		
Rock Creek	2+	–	–	–	–	u	72		73	SPR	SUM		
Reed Creek	4	–	–	6	–	c	72	T	74	SPR	SUM		
Scott Run	–	–	–	2	–	o	71		71	SUM			
Hinman Park	2	–	–	4	–	c	73		74	SPR	SUM		
Hinman Creek	4	–	–	4	–	o	74		74	SPR			
Steamboat Lake	–	–	–	7	–	c	68	T	74	SPR	SUM		04-07-77
Red Creek	4	–	–	6	–	c	72	T	74	SPR	SUM		
Mill Creek (I)	4	–	–	6	–	c	72	T	74	SPR	SUM		
Floyd Creek	2+	–	–	2	–	c	68	T	74	SPR	SUM		
Larson Creek	2+	–	–	2	–	c	68	T	74	SPR	SUM		
Dutch Creek	2+	–	–	4	–	c	68	T	74	SPR	SUM		
Deep Creek (II)	2+	–	–	21	–	c	68	T	74	SPR	SUM		
Willow Creek (I)	4	–	–	4	–	c	72	T	74	SPR	SUM		
Beaver Creek	2+	–	–	12	–	c	73	T	74	SPR	SUM		
Cow Creek	P	–	–	2	–	c	73		74	SPR			
Pearl Lake	2	–	–	4	–	o	72		74	SPR	SUM	FALL	
ELKHEAD CREEK	2	–	–	7	–	c	71	T	74	SPR	SUM		
First Creek	6	–	–	x	–	c	53	T	74	SPR	SUM		
Second Creek	2	–	–	x	–	c	73	T	74	SPR	SUM		
Jokodowski Creek	4	–	–	6	–	c	72	T	74	SPR	SUM		
Circle Creek	2+	–	–	x	–	c	73	T	74	SPR	SUM		
Knowles Creek	2+	–	–	x	–	c	73	T	74	SPR	SUM		
Torso Creek	2+	–	–	1	–	c	72	T	74	SPR	SUM		
Armstrong Creek	2+	–	–	x	–	c	73	T	74	SPR	SUM		
SLATER CREEK	P	–	–	6	–	c	73	T	74	SPR	SUM		
Grizzly Creek	2+	–	–	x	–	c	73	T	74	SPR	SUM		

DRAINAGE	NESTING	STAGING	DANCING	FEEDING	MIGRATION	STATUS	YEARS FROM	YEARS TO	TIME OF YEAR PRESENT
NORTH PARK									
Little Grizzly Creek	-	-	-	2	-	u	71	71	SPR
Big Grizzly Creek	P	-	-	1	-	u	74	74	SPR
Illinois River	-	-	-	2	2	u	74	74	SPR
Potter Creek	-	-	-	9	9	u	74	74	SPR
Encampment River	-	-	-	1	-	u	74	74	FALL

CONSERVATION AGREEMENT AND STRATEGY

FOR

COLORADO RIVER CUTTHROAT TROUT
(*Oncorhynchus clarki pleuriticus*)

in the States of
Colorado, Utah, and Wyoming

April 2001

ELKHEAD MOUNTAIN GEOGRAPHIC AREA ROADS ANALYSIS

Medicine Bow-Routt National Forest
Hahns Peak-Bears Ears Ranger District

June 25, 2001

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INTRODUCTION

In August 1999, the Washington Office of the USDA Forest Service published Miscellaneous Report FS-643 titled "Roads Analysis: Informing Decisions about Managing the National Forest Transportation System". The objective of roads analysis is to provide decision makers with critical information to develop road systems that are safe and responsive to public needs and desires, are affordable and efficiently managed, have minimal negative ecological effects on the land, and are in balance with available funding for needed management actions.

In October 1999, the agency published Interim Directive 7710-99-1 authorizing units to use, as appropriate, the road analysis procedure embodied in FS-643 to assist land managers making major road management decisions. The Rocky Mountain Region of the Forest Service then published a roads analysis guidance document as a supplement to Appendix 1 of FS-643. This document provides guidance concerning the appropriate scale for addressing the roads analysis.

Background

The initiation of the Elkhead Mountain Geographic Area (EMGA) Roads Analysis was in part due to travel management concerns raised by the California Park Work Group. Several projects were identified by the workgroup that have issues related to roads and road management. These projects include watershed improvement, recreation, and wildlife management. To evaluate and possibly implement these projects, a Roads Analysis is needed to identify and prioritize these potential projects. While the California Park Special Interest Area (CPSIA) lies within both the Slater Creek and Elkhead Mountain Geographic Areas, the Geographic Area scale was determined to be the most appropriate scale of analysis, in order to fully evaluate the transportation system affecting the CPSIA. Furthermore, a Geographic Area scale roads analysis would be useful to many other projects that would occur within the EMGA in the future.

Purpose and Need

Although the roads analysis was initiated due to ecosystem management needs of the CPSIA, the roads analysis will benefit all resource areas in the geographic area. Roads analysis helps implement Forest Plans by identifying management opportunities that can lead to site-specific projects. For example, through a roads analysis the ID team may discover that the watershed adjacent to dispersed campsites would benefit by improving dispersed campsites with a hardened surface. A roads analysis can lead to projects such as interpretive education, range improvements, fire management, etc.

> *Purpose:* Roads analysis is an integrated ecological, social, and economic science-based approach to transportation planning that addresses existing and future road management options. Roads analysis informs management decisions about the benefits and risks of constructing new roads in unroaded areas; relocating, stabilizing, changing the standards of, or decommissioning unneeded roads; access issues; and increasing, reducing or discontinuing road maintenance.

Need: Roads analysis is important to identify the important travel systems; maintenance of individual roads and the cost effectiveness of maintaining; identifying public and private access needs, and the ecological impact of roads on the EMGA.

Products

The product of this analysis is a report for decision makers and the public that documents the information and analyses used to identify opportunities and set priorities for future National Forest road systems. Included in this report is a map displaying the known road system for the EMGA analysis area, and the risks and opportunities for each road or segment of road. The goals of this EMGA analysis are as follows:

Goals

- ✧ Identify important travel systems for social, economic, range, recreation, wildlife, timber, and fire management purposes and maintain these roads in a cost effective manner.
- ✧ Identify the need for accessing areas of EMGA that do not offer public or government access for purposes of timber, range, recreation, wildlife, or fire management.
- ✧ Identify roads that need maintenance for government and/or public access, but improvements are necessary.
- ✧ Identify roads causing resource damage where the decommissioning would benefit watershed, fishery, wildlife and sensitive species habitats.

Roads Analysis Process

Roads analysis is a six-step process. The steps are designed to be sequential with the understanding the process may require feedback and iteration among steps over time as an analysis matures. The amount of time and effort spent on each step differs by project based on specific situations and available information. The process provides a set of possible issues and analysis questions for which the answers can inform choices about road system management. Decision makers and analysts determine the relevance of each question, incorporating public participation as deemed necessary. The six-step process followed by the Interdisciplinary Team is as follows:

Elkhead Mountain Geographic Area Roads Analysis Process

Step 1. Setting up the analysis

- Identify IDT
- Statement of objectives
- Identify scale/analysis area
- Develop plan for analysis
- Identify basic information needs

Step 2. Describing the situation

- Describe existing road system
- Description of access needs

Step 3. Identifying issues

- Identify important road-related issues
- Identify specific information needed to address these concerns

Step 4. Assessing benefits, problems, and risks: the 72 questions

- Systematically examine the major uses and effects of the road system
- Develop synthesis of benefits, problems, and risks of current and new roads

Step 5. Describing opportunities and setting priorities

- Identify management opportunities
- Formulate technical recommendations
- Establish priorities: roads matrix

Step 6. Reporting

- Report describing management opportunities and priorities
- Map of management opportunities

EXISTING CONDITION

Description of the Elkhead Mountain Geographic Area

The Elkhead Mountain Geographic Areas encompasses a portion of the Bears Ears side of Hahns Peak-Bears Ears Ranger District. The Elkhead Mountain Geographic Area encompasses 72,303 acres of Forest land and is located just south of the Slater Creek Geographic Area in the Northwest portion of the Routt National Forest. The forested cover is composed of: Aspen (55%), spruce-fir (23%); and grass, forbs, and shrubs (20%) dominate this 72,303 acre area. Within the forested area, 60% is considered late successional. This area has valuable habitat for marten and goshawk.

Unique features include:

- The Elkhead Mountain Range, Black Mountain, and California Park.
- Some unstable soils.
- North Fork Elkhead and Sawmill Creek Preliminary Conservation Planning Areas.
- Colorado River cutthroat trout.
- Highest levels of recreation use in the fall during hunting season. Historic stock driveways located throughout the area.
- An electronic site located along the boundary common to this geographic area and the Slater Creek geographic area.
- Special Interest areas, California Park and Black Mountain.
- Low motorized travelway density. Primary access provided by Forest Roads 110 and 150.

Table 1: Management Area Prescription Allocation – Elkhead Mountain Geographic Area			
	Management Area Prescription	**Acres**	**Percent of Total Area**
1.32	Backcountry Recreation, Nonmotorized	21,428	30
2.1	Special Interest Area	18,234	25
4.2	Scenery	2,188	3
4.3	Dispersed Recreation	2,518	3
5.11	General Forest and Rangelands- Forest Vegetation Emphasis	21,706	30
5.12	General Forest and Rangelands- Range Vegetation Emphasis	2,801	4
5.13	Forest Product	699	1
	Nonfederal Land	2,728	4
	Total	72,303	100

Source: GIS (ARC/Info), allocation and geographic area layers

Existing road system

The roads that affect or provide direct access to the Analysis Area include the following Forest Development Roads (FDR)/County Roads (CR):

Moffatt County Roads and Elkhead Mountain Geographic Area FDR		
CR 80 (FDR 150)	CR 76 (FDR 123)	CR 27 (FDR 110, 134)
CR 11 (FDR 112)	CR 56A (FDR 475)	CR 62 (FDR 42)

The roads within the Analysis Area are as follows:

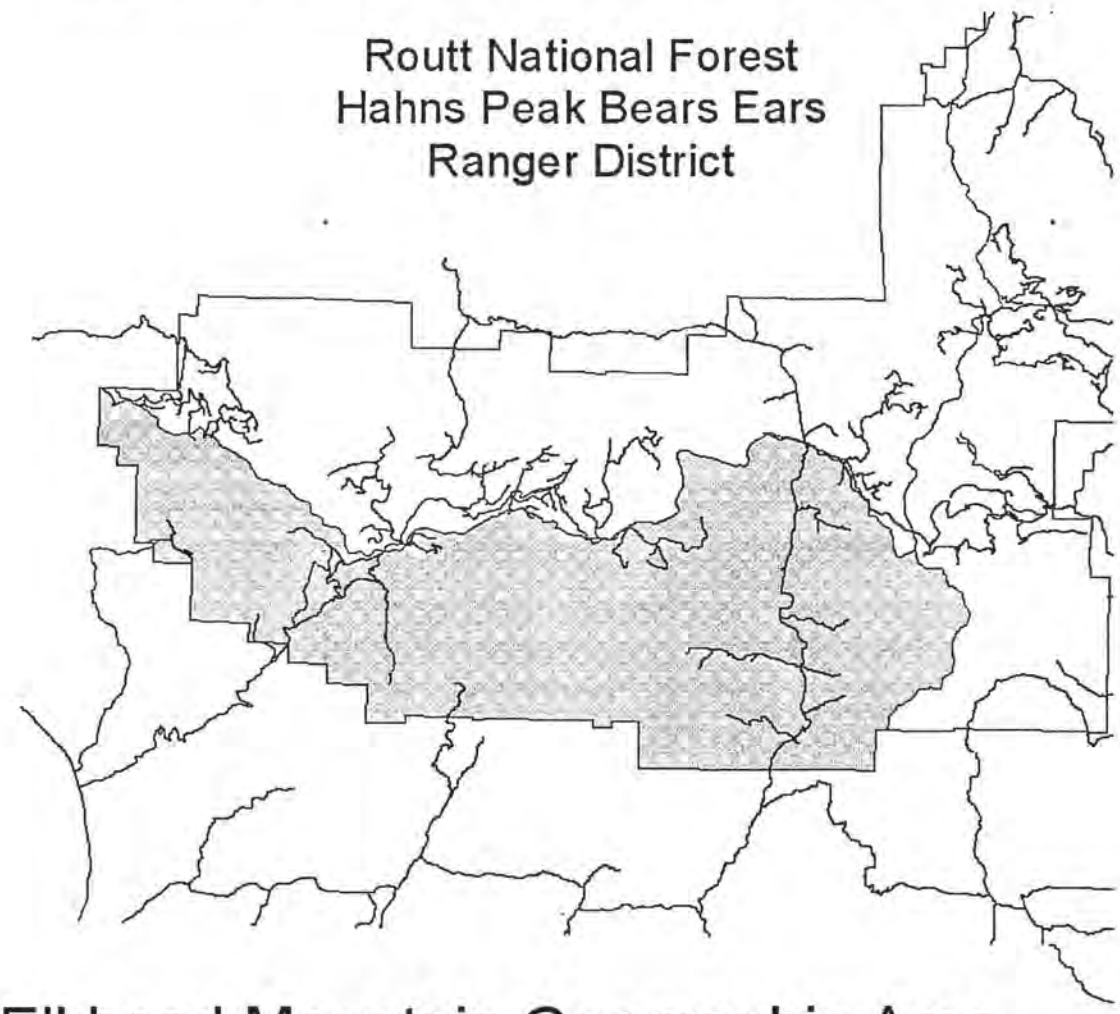
FDR within Elkhead Mountain Geographic Area										
109	99	94	110	162	130	133	163	157	116	159
119	158	118	154	156	126	150	49	42	487	48

The above list of roads does not include spur roads. For an overview of all roads in the EMGA see map included with this roads analysis.

Desired Condition of the Elkhead Mountain Geographic Area Roads

The areas seen from Forest Roads 110 and 150, sites within the California Park Special Interest Area, and certain recreation sites will have a natural appearance. Human-caused disturbance will not be apparent in areas allocated to backcountry nonmotorized recreation. Management activities will be visible in areas allocated to forest products and general forest and rangeland prescriptions. The area will provide year-round motorized and nonmotorized recreation opportunities, with the heaviest use in fall and winter. Dispersed motorized and nonmotorized recreation opportunities will be available. The central portion will provide backcountry nonmotorized opportunities. Visitor interaction will be infrequent in most areas. Nonmotorized winter recreation will be provided in this area. A low motorized travelway density will provide access primarily for timber and grazing uses and for dispersed recreation. Road standards will accommodate vehicles ranging from light trucks and utility vehicles to commercial vehicles. No roads will exist in the portion allocated to backcountry nonmotorized recreation.

Map #1 Elkhead Mountain Geographic Area and Existing Road System



Note: Please refer to detailed map included with the roads analysis for a more detailed description of the existing road system.

SUMMARY OF ROAD RELATED ISSUES

The following summarizes issues and concerns of technical specialists, managers, and the public related to the road system.

Access for timber management: Current access for timber and bark beetle management is sufficient to meet current needs. It is not clear if the existing roads system is sufficient to meet future needs. Several old logging roads may not be needed for active management and may be contributing to impacts to watershed, fisheries and wildlife habitats. These roads are identified in the roads matrix and improving closures or decommissioning should be considered

Social and recreation concerns: The Elkhead Mountain Geographic Area has a relative low level of summer recreational use. The unroaded areas are becoming increasingly important for people seeking solitude and avoiding crowded forest areas closer to Steamboat Springs. This area is of high importance for use during the fall hunting periods. Many impacts occur to the road system during the fall hunting periods due to heavy use during the hunting periods when roads become saturated with fall rain and snow.

Watershed concerns: There are several areas that have been identified in the roads matrix (Appendix A) that are resulting in impacts to watersheds. Reducing these impacts is very important for restoring the health of the Elkhead creek watershed. Many impacts can be resolved by improving and upgrading road conditions, others decommissioning or closing may be necessary.

Wildlife: Several of the roads in the Elkhead Mountain Geographic Area are contributing to the movement of elk off the Forest during the fall hunting season. This results in decreased hunter success and limited control over a growing elk population. Seasonal or permanent closure of key roads may help to maintain elk on the Forest, increase hunter success, and help reduce the elk herd. Some timber management areas have high road density that is increasing the fragmentation of lynx habitat. Decommissioning and revegetating these roads would improve lynx habitat. A few roads are impacting nesting goshawk territories, seasonal or permanent closure is recommended to alleviate these effects. Appendix A identifies and prioritizes the roads and the wildlife issues. There is a need to maintain the spring closure of FDR 150 for the benefit of nesting sandhill cranes, breeding boreal toads, calving elk and sharp-tailed grouse.

Private land access: the current road system provides adequate access to private land and private land inholdings. Arrangements have been made with private inholding owners to meet the needs of reasonable access.

Road maintenance and decommissioning costs: Road maintenance can be very costly. Many of the roads in the Elkhead Mountain Geographic Area are significantly impacted during the wet fall hunting periods by motorized vehicles. This annual impact has made it expensive and prohibits annual maintenance of all roads used by hunters during the fall. This has resulted in continued deterioration of road conditions and impacts to other

resources such as watershed. An example of this is the First Creek Road East – FDR 150.2D. Seasonal or permanent closure would decrease these high impacts and costs.

ASSESSMENT OF EFFECTS – "The 72 Questions"

To assess the effects of roads in the analysis area, the process described in Step 4 and Appendix 1 in "Roads analysis: informing decisions about managing the National Forest transportation system" (USFS, 1999a) was used. The Region 2 Roads Analysis Guidance package (USFS, 2000) provided additional guidance in addressing these questions. Detailed information such as field surveys to support the findings in this section can be found in the project file.

ECOSYSTEM FUNCTIONS AND PROCESSES (EF)

EF1: What ecological attributes, particularly those unique to the region, would be affected by roading of currently unroaded areas?

Areas without roads are relatively rare in this region of Colorado. Unroaded areas provide important wildlife habitats with reduced human related disturbance. Many of the unroaded areas contain unstable soils that may negatively impact the watersheds and riparian function in the area if roading occurred. It is likely that roading unroaded areas in this geographic area would displace wildlife to private lands and habitats of lower quality. Large lower elevational roadless areas are uncommon in this region of Colorado and therefore these areas are important controls for evaluating effects of road construction and use in other areas of the geographic area.

EF2: To what degree do the presence, type, and location of roads increase the introduction and spread of exotic plant and animal species, insects, diseases, and parasites? What are the potential effects of such introductions to plant and animal species and ecosystem function in the area?

As discussed in the Noxious Weed Implementation Plan (USDA Forest Service, 2000), "noxious weeds are any plant which has been designated by a federal, state, or county government to be injurious to public health, agriculture, recreation, wildlife, or any public or private property [see Appendix C for list of noxious weeds on the Forest]. They can dominate native plant communities to the extent plant diversity and ecosystem integrity are threatened.

Noxious weeds occur throughout most plant associations and geographic areas of the Forest. In general, noxious weeds are most common in areas where human activity is having, or has had, the greatest impact on soil and vegetative resources and/or where human activities have resulted in the introduction of seed sources.

Ground disturbing activities or areas where herbaceous cover has been removed are the sites most susceptible to noxious weed invasion and spread. These areas include roadways, rock or borrow pits, timber harvest areas, livestock concentration areas, beaver

dams, areas where mining & oil and gas activity have occurred, trailheads, ORV use sites, dispersed recreation campsites, areas where hay is fed to livestock, and areas where heavy vehicular traffic occurs."

Roads are frequently sources of noxious weeds, sites with high potential for new infestations, and effective means of spreading weeds and weed seeds to new, uninfested areas. Weed seeds can be picked up, transported, and deposited by vehicles, in mud sticking to the vehicle, in wheels, and in other parts of the undercarriage of the vehicle. Existing weed infestations on the forest can be spread to other areas and new weeds can be introduced to uninfested areas. Although disturbed sites are more susceptible to noxious weed invasions, noxious weeds have become established in relatively undisturbed ecosystems as well (USDA Forest Service, 1998).

Noxious weed infestations can lead to the establishment of undesirable vegetation monotypes, and to declines in watershed conditions. As noxious weeds outcompete native and desired vegetation, wildlife and livestock forage amounts and qualities can decline. The natural diversity in plant species composition can also decline. The presence of roads in an area requires more diligent monitoring and treatment of noxious weeds, to avoid or at least minimize the adverse effects of noxious weed infestations. This obviously requires an investment of money and people's time.

The road system may cause indirect habitat loss to at-risk aquatic species by increasing sedimentation in adjacent streams. The increased sedimentation can cause habitat loss by changing stream flow and riparian vegetation composition, which in turn may reduce available cover, rearing, and spawning habitat for at-risk aquatic species. The FDR 150.2D and dispersed campsite is causing increased sedimentation to the Cutthroat fishery of First Creek.

Although the road system provides several locations for fishing opportunities to small and large creeks and ponds as well as access to Freeman Reservoir, a moderate level of recreational anglers visit this analysis area. The entire road system in the analysis area provides access to the aquatic habitats that may lead to poaching opportunities. Anywhere the road system crosses a stream or wet area will provide potential for poaching opportunities of fish or other aquatic species. However, there are no locations where this is a significant concern.

EF3-4: How does the road system affect ecological disturbance regimes in the area? To what degree does the presence, type, and location of roads contribute to the control of insects, diseases, and parasites?

Engelmann spruce bark beetle (SBB) and mountain pine beetle (MPB) are increasing in the Elkhead Mountain Geographic Area. Epidemic populations of SBB are expected over the next several years. Existing roads in timber management areas, including roads closed to the public will improve the ability for the Forest Service to manage this epidemic. Most Forest roads in timber management prescription areas (5.11 and 5.13) are high quality roads that will allow efficient access to areas of infestation.

EF5: What are the adverse effects of noise caused by developing, using, and maintaining roads?

The Elkhead Mountain Geographic Area generally gets relatively low public use outside of hunting season. Current level of summer use and maintenance is not having any significant ecological effects. Fall use may impact roads during muddy conditions. There is a high level of disturbance to wildlife from public use of these roads during the fall hunting seasons. This disturbance usually results in elk herds leaving the Forest and moving to private lands. This has resulted in decreased hunter success and comments and concern from the public regarding this problem (see Appendix E). Early spring use is disturbing to calving elk and nesting sandhill cranes in the Slater Park Area. Comparing wildlife use between the closed California Park area and the Open roads in the Slater Park area clearly illustrates the effects of springtime recreational disturbance. Road development typically has high but short-term effects due to the actual development disturbance but often long-term significant ecological effects to wildlife habitats.

AQUATIC, RIPARIAN ZONE, AND WATER QUALITY (AQ)

AQ1: How and where does the road system modify the surface and subsurface hydrology of the area?

Roads expand the channel network, convert subsurface flow to surface flow, and reduce infiltration on the road surface. These factors affect the surface and subsurface flow, and overall hydrology of an area. The channel network is expanded through road ditches, which act as stream channels in previously unchannelized areas. Road ditches intercept shallow subsurface flow and convert it to surface flow, which is delivered to the stream channel through road ditches. An expanded channel network augments peak flows since water traveling as surface flow reaches the channel faster than water traveling as subsurface flow (Wemple et al., 1996). Reduced infiltration contributes to additional surface flow since water does not infiltrate and become stored in the soil profile, but rather runs off as overland flow.

While all of the road drainage ditches modify the surface hydrology to a degree by creating additional surface flow paths, specific areas of concern include:

- FSR 150.2d (First Creek road east): Drainage on this road is inadequate. Water from the uphill side of the road is intercepted by the road, and then flows down the road until diverted by a drainage structure into First Creek. Over time, the road has become incised which results in further interception of subsurface flow and effects to the hydrology of the area.

AQ2: How and where does the road system generate surface erosion?

Surface erosion is highly dependant on soils, road grade, road surfacing, and the effectiveness and spacing of drainage structures. Soils with little binder material, and

long distances between drainage structures, particularly on steep slopes, are all factors, which contribute to surface erosion. There are opportunities at the following locations to reduce surface erosion and subsequent sedimentation to the stream system:

- FSR 150.2d: Inadequate drainage results in surface erosion on this road. Eroded materials are delivered to First Creek through connected disturbed areas, particularly in the first half mile of the road. This road has become incised which makes improving drainage to reduce surface erosion more difficult.

AQ3: How and where does the road system affect mass wasting?

The primary effect of the road system to mass wasting is by changing the subsurface flow of water as well as removes the toe of the slope, which causes mass movement. Roads should be constructed to avoid areas that are very prone to mass movement or if that cannot be done, use management practices to stabilize the slope.

- FSR 150.2D First Creek Road is cutting at the toe of an unstable slope., which is causing mass movement.

- FSR 116.2 Road is located in an area of slag ponds and the soils in this area area unstable. The road dead-ends at this location of ponds and unstable soils. The road closure could be moved back a short way out of this area.

AQ4: How and where do road-stream crossings influence local stream channels and water quality?

The primary effects to local stream channels and water quality at road-stream crossings are due to 1) changes in the natural hydrologic function of the stream channel due to channel constriction, misalignment relative to the natural channel pattern, or improperly sized culverts, and 2) delivery of sediment directly to the stream channel through connected disturbed areas which degrades water quality. Connected disturbed areas are defined as 'high runoff areas such as roads... that discharge surface runoff into a stream... connected disturbed areas are the main source of damage in all regions' (FSH 2509.25-99-2).

There are opportunities as the following locations to reduce the effects of road-stream crossings on local stream-channels and water quality:

- FSR 150.1 at the First Creek road-stream crossing: The culvert at this location is not set in alignment with First Creek. As a result, a large back-eddy scour pool has developed below the culvert outlet. The back-eddying has resulted in raw streambanks on both sides of the channel, and widening of the stream up to two times its natural width. The raw streambanks and channel widening have increased sediment loads in First Creek. **AQ 11:** In addition to the direct effects of the

culvert on channel dynamics, a dispersed campsite has developed immediately adjacent to First Creek. The riparian condition has been degraded by use of this campsite, which further contributes to the streambank instability created by the First Creek culvert.

- FSR 150.1 at the Second Creek road-stream crossing: The culvert at this location appears to be improperly set, and possibly too small. Beaver frequently dam the culvert, resulting in spring flows sometimes overtopping the road. Efforts to remove the beaver dams with heavy equipment have damaged the culvert inlet. Sediment deposits are evident in Second Creek below the road due in part to sediment from the road, and partly from sediment deposits released from the beaver dam every year when it is removed during the summer months.

- FSR 150.1 at the Upper Elkhead Creek crossing: This culvert is inadequate to pass peak flows and is affecting channel function and physical processes.

AQ5: How and where does the road system create potential for pollutants, such as chemical spills, oils, deicing salts, or herbicides, to enter surface waters?

All road-stream crossings and areas where roads are adjacent to streams are potential sites for pollutants to enter surface waters. However, there are no locations where this is a significant concern.

AQ6: How and where is the road system "hydrologically connected" to the stream system? How do the connections affect water quality and quantity?

Water quality and quantity are affected where connected disturbed areas deliver water and sediment directly to the stream channel. Most of the locations affecting water quality and quantity are identified in AQ 1, AQ2, and AQ4. In addition, the following location is a connected disturbed area that is affecting water quality and quantity:

- FSR 150.1- unclassified spur road near Armstrong Creek: This unclassified road is part of an old road system that accessed a homestead on the west side of Elkhead Creek. A carsonite post at the Elkhead road-stream crossing indicates that this road has been technically closed (??), although there are signs of occasional use. This road accesses a couple of dispersed campsites, including one immediately adjacent to Elkhead Creek in the floodplain. The road runs down the fall-line as it drops from the high terrace down to the floodplain. Drainage is inadequate in this section of road, resulting in gullying of the road surface. Sediment derived from the gullying is delivered directly to Elkhead Creek at the road-stream crossing. Opportunities to reduce sedimentation and impacts to water quality include closing the road on the upper terrace before it drops down to the floodplain. There are still opportunities for dispersed camping on the terrace while reducing effects to water quality in Elkhead Creek.

AQ7: What downstream beneficial uses of water exist in the area? What changes in uses and demand are expected over time? How are they affected or put at risk by road-derived pollutants?

State designated beneficial uses for the Slater Creek geographic area include aquatic cold life 1, recreation 1, water supply, and agriculture. None of the streams are listed as impaired on the Colorado 303(d) list (CDH, 1998), although First Creek is on the state monitoring and evaluation list. Streams are placed on this list in when there are reasons to suspect water quality problems, but uncertainty exists regarding one or more factors. Sediment derived from roads is one of the factors contributing to the potential concern.

There are no other expected changes in demand or use over time. Road derived pollutants may be increasing sediment deposition which may affect the aquatic cold life 1 designated beneficial use.

There are no other expected changes in demand or use over time. Road derived pollutants may be increasing sediment deposition which may affect the aquatic cold life 1 designated beneficial use.

AQ8: How and where does the road system affect wetlands?

Wetlands were included as part of the Routt Riparian Inventory (RNF, 1993). Map XX displays the road network relative to the stream network and riparian areas including potential wetlands. Field reconnaissance found that there are no locations where the road system is significantly affecting wetland condition or function.

AQ9: How does the road system alter physical channel dynamics, including isolation of floodplains, constraints on channel migration, and the movement of large wood, fine organic matter, and sediment?

AQ 4 identifies road-stream crossings where the road system is affecting channel dynamics. One additional area of concern is where FSR 154.1 has constrained channel migration. Slater Creek recently blew through FDR 154.1 in the vicinity of the Slater Creek road-stream crossing. The road created a weak point on the outside of a meander bend. Over time, Slater Creek eroded the outside of the meander bend and eventually eroded all the way through FSR 154.1. A new channel was developed with the following effects: 1) The new channel is much shorter than the existing channel. Shortening stream channels increases water slope, which increases stream power and the energy available for streambank erosion. 2) The new channel contributed approximately XX cubic yards of sediment to Slater Creek below the blowout. 3) The new channel re-enters Slater Creek perpendicular to the old channel. This results in the current flow being directed directly into one of the Slater Creek streambanks, which is causing destabilization of this streambank, and contributing additional sediment to the stream channel. Opportunities to restore local stream channel function and reduce water quality impacts include returning the Slater Creek to its original channel.

AQ10: How and where does the road system restrict the migration and movement of aquatic organism? What species are affected and to what extent?

FDR 150:

- The culvert located on Armstrong Creek on FDR 150 is in bad repair at the inlet, making it very difficult for fish passage because culvert is bent, twisted, and water flows underneath. Cutthroats are present above and below the road.
- The culvert located on Elkhead Creek lies at a gradient of 2.5% and is the uppermost crossing of the drainage. The culvert is severely damaged on the upstream side. The stream flow is obstructed by the edges bent in front of the mouth of the culvert.
- It is evident that the culvert on First Creek is too small for runoff flows due to the erosion and resource damage occurring at the outlet. Cutthroat trout are present on both sides of culvert and the population would benefit through ease of migration if the culvert was replaced with a bottomless arch.
- Replacing the culvert located on Torso Creek with a bottomless arch culvert would benefit cutthroat and brook trout populations by providing unobstructed migration and movement to historic spawning areas.

AQ11: How does the road system affect shading, litterfall, and riparian plant communities?

There road system is affecting riparian plant communities at road-stream crossings, with the problem areas being identified in AQ4. There are additional concerns on FSR 118.2A. This spur road runs through the riparian meadow adjacent to Grizzly Creek, and is having localized effects on riparian condition. There may be opportunities to establish a trailhead near the intersection of FSR 118.1 and 118.2A, and decommission the rest of the road to reduce effects to the riparian meadow.

AQ12: How and where does the road system contribute to fishing, poaching, or direct habitat loss for at-risk aquatic species?

The road system provides several locations for fishing opportunities to small and large creeks and ponds. The entire road system in the analysis area provides access to the aquatic habitats, which could lead to poaching where the road system crosses a stream or wet area.

The road system may cause indirect habitat loss to at-risk aquatic species by increasing sedimentation in adjacent streams. The increased sedimentation can cause habitat loss by changing stream flow and riparian vegetation composition which in turn may reduce available cover, rearing, and spawning habitat for at-risk aquatic species. The road that parallels First Creek has prevalent resource damage and is causing sedimentation in this Cutthroat stream.

AQ13: How and where does the road system facilitate the introduction of non-native aquatic species?

Anywhere the road system crosses a stream or wet area and there is enough suitable habitat to support a species long enough for it to migrate to a more desirable habitat is where the road system would facilitate the introduction of non-native aquatic species.

AQ14: To what extent does the road system overlap with areas of exceptionally high aquatic diversity or productivity or areas containing rare or unique aquatic species or species of interest?

First Creek has high aquatic diversity with Cutthroat trout present and a historic breeding area for boreal toads. The dispersed campsite and the road that runs along First Creek is decreasing productivity for these sensitive species as well as the riparian/willow area by causing resource damage and increasing erosion and sedimentation into the streambed.

TERRESTRIAL WILDLIFE (TW)

TW1: What are the direct effects of the road system on terrestrial species habitat?

The general direct effects include population isolation, edge effects, habitat loss and fragmentation and reducedhabitat effectiveness. These direct effects can:

1. Isolate populations of species with low mobility, such as the boreal toad, depending on the type of road and the level of use.
2. Increase the presence of edge species (birds, mammals, plants). An increase in edge species can result in greater predation risk to animals in forested ecosystems. For example, the opening of habitat and creation of edge may make species such as red squirrel and snowshoe hare more vulnerable to avian predation from species such as red-tailed hawks that would not typically forage in a closed forest canopy. Additionally, some wildlife species will avoid crossing roads, which limits the available habitat to wildlife. Edge effects from roads can be most pronounced in forested landscapes.
3. Fragmentation can result in both the direct effects of loss of habitat, decrease connectivity of populations, increase predation, result in higher demographic stochasticity and change population structure from contiguous habitats to isolated metapopulations.
4. Use of the roads by people can result in increased disturbance and avoidance of roaded habitats.
5. Presence of roads increase winter snowmobile use in an area due to the constructed road prisim. This results in disturbance to wildlife during critical winter periods. Increases compacted snow routes and may facilitate the movement of competitors of lynx (ie – coyote) into lynx habitat,
6. Road construction will decrease elk and deer habitat effectiveness by reducing security areas. The elk habitat effectiveness in the Elkhead Mountain Geographic Area is presented below.

Elk Habitat Effectiveness

Geographic Area	Hiding Cover Index	Open Road Density miles/section	Road Density Index	% Habitat Effectiveness	Standards and Guidelines
Elkhead Mountain (1B) overall	0.618800	0.56	0.74	45.79	50% STANDARD
Elkhead Mountain 5.11	0.769875	0.65	0.71	54.66	60% Guideline
Elkhead Mountain 5.13	0.705500	0.46	0.78	55.03	50% Guideline

TW2: How does the road system facilitate human activities that affect habitat?

In general, the analysis area road system provides access for permitted fire wood collection which reduces density of snags and/or area where snags are present due to removal near roads, as facilitated by road access (Hann and others, 1997). Fire wood collectors often harvest snags or down logs that provide habitat for pine martens, owls, and woodpeckers. Firewood collectors reduce habitat for these species in areas where roads are in close proximity. No particular area has been identified where this is a concern.

The road system facilitates human activities that result in disturbances to wildlife. Elk are known to leave the area during the fall due to increased human activities on ridgeline roads and roads that run into interior forested habitats. This results in elk and deer unable to use habitats during the fall periods.

Roads provide the prism for winter snowmobile use. Winter snowmobile use on these roads increases snow compaction, which might facilitate coyote moving into suitable lynx habitat.

TW3: How does the road system affect legal and illegal human activities? What are the effects on wildlife species?

In the EMGA, the motorized use of roads during the fall hunting seasons as well as the increased pressure by the hunters has negatively impacted big game in this area. The elk respond to this increased pressure by leaving National Forest land and moving to adjacent private land where they remain throughout the hunting seasons. The elk heard in this SCGA are beyond the desired herd objective set by the Colorado Division of Wildlife.

Open roads facilitate access for legal hunting and trapping. Effects include direct human caused mortality and injury from hunting and trapping activities. Closed but not decommissioned or obliterated roads increase human access, including illegal use of closed roads by ATV's. This has been demonstrated to be problematic on many of the closed roads in the Slater Creek Geographic Area during the hunting season. Closed roads increase hiking and mountain biking activities in areas not usually accessed by humans. This can result in disturbance to wildlife species

TW4: How does the road system directly affect unique communities or special features in the area?

Within the EMGA are the Slater Park Macro Preliminary Conservation Planning Area (SPMPCPA) and the California Park Special Interest Area (CPSIA). The CPSIA was selected for designation based on it geological, zoological, historical, paleontological, and scenic values. The CPSIA contains the highest diversity of threatened, endangered, and Region 2 sensitive species on the Routt National Forest.

The SPMPCPA is one of three macro sites identified by the Colorado Natural Heritage Program for the Routt National Forest. The SPMPCA boundary was delineated to identify significant natural communities and the breeding habitat of wetland and upland birds and amphibians in need of protection and specific management. The Colorado Natural Heritage Program designated this area as such due to the rarity of the species the community supports.

ECONOMICS (EC)

EC (1): How does the road system affect the agency's direct costs and revenues? What, if any, changes in the road system will increase net revenue to the agency by reducing cost, increasing revenue, or both?

This analysis will be completed as part of individual project EA/EIS.

EC (2): How does the road system affect the priced and non-priced consequences included in economic efficiency analysis used to assess net benefits to society?

This analysis will be completed as part of individual project EA/EIS.

EC (3): How does the road system affect the distribution of benefits and costs among affected people?

This analysis will be completed as part of individual project EA/EIS.

COMMODITY PRODUCTION (TM, MM, RM)

Timber Management

TM1: How does the road spacing and location affect logging system feasibility?

Wider distances between roads in suitable lands results in an increase of costs due to higher logging costs (skidding distances). Non-ground based systems also rely on roads adjacent to harvest units in order to keep logging costs feasible to meet resource objectives. These systems have a higher operating costs, this presence and proximity of existing and new road construction is important.

TM 2-3: How does the road system affect managing the suitable timber base and other lands? How does the road system affect access to timber stands needing silvicultural treatment?

Approximately one-third (31%) of the analysis area is in the suitable timber base (MA 5.11, 5.13) and some of these areas have been harvested, with varying levels of intensity. Previous forest management has resulted in the existing network of roads, necessary for the removal of logs. Without these roads, timber removal would not be feasible due to access and lack of alternative logging methods in the area, and all suitable lands would need to be removed from the suitable base.

The road system will need to be expanded if silvicultural treatments in suitable MA's where harvesting has not previously occurred is proposed to implement the Forest Plan.

Minerals Management

MM 1: How does the road system affect access to locatable, leasable, and salable minerals?

The existing road system provides sufficient opportunity for access to locatable leasable and salable minerals.

Range Management

RM 1: How does the road system affect access to range allotments?

The existing road system provides sufficient access to range allotments for the permittees and the Forest Service rangeland managers. Most of the range allotments are only fully accessed by horseback. The current amount and distribution of roads is sufficient to allow efficient movement of livestock to and from the allotments, efficient trailering of horses to the allotments, and access for construction and/or maintenance of range improvements.

Many of the roads in the area are not needed for access to the allotments. See Appendix A for a listing of the roads and their importance to range management.

WATER PRODUCTION (WP)

WP1-3: How does the road system affect access, constructing, maintaining, monitoring, and operating water diversions, impoundments, and distribution canals or pipes, municipal watersheds, or hydroelectric projects?

There are no operating water diversions, impoundments, distribution canals, pipes, or hydroelectric projects in the Elkhead Mountain Geographic Area. These types of projects are not affected by the existing road system. Elkhead Creek flows into Elkhead Resevoir (private land) which is a municipal watershed.

SPECIAL FOREST PRODUCTS (SP)

SP 1: How does the road system affect access for collecting special forest products?

Collecting special forest products often depends on using existing forest roads. These activities provide employment opportunities, but typically do not support developing or maintaining roads. The Elkhead Mountain Geographic Area provides limited special forest products. The existing road system is sufficient to accommodate the current and predicted need.

SPECIAL USE PERMITS (SU)

SU 1: How does the road system affect managing special-use permit sites (concessionaires, communications sites, utility corridors, and so on)?

Many of the special-use areas on national forest lands are by permit, for profit or are access needs to private land, which may include: commercial recreation (outfitter and guides), communication sites, utility corridors, and right-of-ways for access to private land. Special-use permittees need for quick and efficient access to permit areas directly affects the profitability of their business.

Recreation Special-Use Permits:

- First Creek Ranch (Tracey Phillips) special-use permit is for packing game meat for clients. Although the permit is for district-wide, the permittee owns a private inholding along Quaker Mountain where access needs will be focused. Analysis area access needs include FDR 150 and 115 to Quaker Mountain.
- Rhynne Outfitters (Bruce Rhyne) special-use permit is for outfitter/guide for hunting, bicycling, and horse backriding. Access needs include, FDR 150 and 42 for big game hunter outfitter/guide services and FDR 110 and 133 for bicycling and horseback riding outfitter/guide services.
- Wilderness Tracks (Harley Johnson) special-use permit is for big game hunting outfitter/guide services. Access needs include, FDR 112.

Other existing permits, which have access needs include:

- Electronic site on Blk Mtn – FDR #110
- Freeman Reservoir (DOW) – FDR #112
- Sherman Youth Camp – FDR 112.2b/c
- FDR #115.1, 115.1a (First Creek Ranch)
- FDR 109, 99, 94 are NOT legal access to private – LOW priority roads
- ditches – FDR #150 only, no small roads needed

GENERAL PUBLIC TRANSPORTATION (GT)

GT(1): How does the road system connect to public roads and provide primary access to communities?

The county road (CR) 80, connects with FDR 150, is the main public access to the analysis area for the Hayden community. FDR 150 is primarily a summer travel road and is not used as a road system that provides access to communities. The county road 27, connects with FDR 110 and 134, provides public access to the analysis area for the Craig and Hayden communities. FDR 110 and 134 are primarily summer travel roads and are not used as a year-round road system that provides access to Hayden and Craig communities. See table below for list of county roads that connect with forest roads. Note: The analysis area roads are primarily used during the summer and fall months and are closed during the winter. Snowmobiles are used for winter access and recreation.

Moffatt County Roads and Elkhead Mountain Geographic Area FDR		
CR 80 connects to FDR 150	CR 76 connects to FDR 123	CR 27 connects to FDR 110, 134
CR 11 connects to FDR 112	CR 56 connects to FDR 475	CR 62 connects to FDR 42

GT(2): How does the road system connect large blocks of land in other ownership to public roads?

The analysis area has one private land in-holding. FDR 115 provides access to a private land in-holding, which can be accessed from FDR 150.

GT(3): How does the road system affect managing roads with shared ownership or with limited jurisdiction? (RS2477, cost share, prescriptive rights, FLPMA easements, FRTA easements, DOT easements)

FDR 150 is managed by Routt County. FDR 150 is a county road. The Forest Service has an agreement with the County to maintain the spring time closure and assist when possible at maintaining culverts along the road.

GT(4): How does the road system address the safety of road users?

The road system safety conditions are consistent with road maintenance levels, as well as expected use and users. The road system is configured and signed to reduce safety hazards within the context of financial, topographic, and use levels. The roads that are currently damaged or eroded pose hazards to users during wet conditions and may become impassable. Highly impacted roads should be improved for safety or closed and decommissioned if use is determined to be low.

ADMINISTRATIVE USE (AU)

AU 1: How does the road system affect access needed for research, inventory, and monitoring?

The existing road system is adequate for needed research, inventory and monitoring.

AU2: How does the road system affect investigative or enforcement activities?

Investigative and law enforcement activities are minimal in the analysis area throughout the majority of the year, except for hunting season. A change in the road system may affect law enforcement by displacing hunters outside of the analysis area and into other portions of the district, which may increase the need for law enforcement in other areas during hunting season.

Closed roads, but not decommissioned or obliterated roads, increase illegal activities and thus increase the need investigation and enforcement of illegal use. Decommissioning and obliteration of unnecessary roads will facilitate enforcement activities by discouraging unauthorized use of closed roads.

PROTECTION (PT)

PT 1: How does the road system affect fuels managements?

Fuels management falls into two basic categories within this watershed. The Spruce-Fir at the higher elevations is actively managed as a timber resource, and the Aspen/grass/forbs and shrub vegetation groups at lower elevations.
Harvest activities with associated fuels treatments comprise most of the fuels management within these stands. These activities depend heavily upon the present road system and needs only minor temporary road development in some areas to allow fuels treatment. These temporary roads are generally built in association with the harvest requirements for timber sales.

The grazing that occurs on the lower elevation sites (aspen stands) is moderately dependent upon road access, so the roads are important for these activities as well. Grazing has a significant impact upon the fire hazard within these areas as much of the annual increase in biomass is removed each year. The present road system is sufficient to support these activities. Any decrease in road access may limit grazing utilization that would result with an increasing fire hazard within the aspen and shrub vegetation types.

The most critical fuels management concern within the watershed would be to continue effective fuels treatment activities within activity-generated slash.

PT 2: How does the road system affect the capacity of the Forest Service and cooperators to suppress wildfires?

This area has limited road access and much of the fire suppression efforts will be dependent upon either aerially delivered fire fighting resources or hand crews with an extended response time. Engines have a limited function within the Slater Creek Geographic Area.

Most suppression efforts within this watershed will be dependent upon hand crew resources. Some of the roads that do exist require high clearance vehicles and may limit the access to four-wheel drive vehicles only.

The biggest affect of the road system will be to delay response and extend contain/control times due to difficulties associated with logistical support.

PT 3: How does the road system affect risk to firefighters and to public safety?

There are no distinctive fire fighter or public safety risk associated with fire suppression within this geographic area. The road system provides for marginal access and regress, and to this road system is the one-way access or regress on forest road 116. Regress and evacuation could become a problem if severe fire behavior were to occur blocking the road during regress or evacuation efforts; however, this road system has no campgrounds or other specific forest-user destinations on it so this risk would be minimal. The risk to fire fighters should also be easily mitigated by proper planning and the identification of safety zones as needed.

PT 4: How does the road system contribute to airborne dust emission resulting in reduced visibility and human health concerns?

Airborne dust emission reducing visibility and human health are not a concern in the analysis area.

RECREATION (UR, RR)

Unroaded Recreation (UR)

UR 1: Is there now or will there be in the future excess supply or excess demand for unroaded recreation opportunities?

Unroaded recreation is expected to increase in the future. The Forest is seeing increased use over the past few years of the unroaded recreational areas in the Elkhead Mountain Geographic Area. These areas appear to becoming more and more important for folks trying to get away form increasingly crowded wilderness areas closer to towns such as Steamboat Springs. It is not known if the current supply of unroaded areas will meet the future demand for this recreational experience. Due to the rapid rate of human growth in this area, roadless areas are expected to become increasingly important for this need. Closures or decommissioning/obliteration of old roads in poor condition may help provide larger areas for recreationists seeking this type of experience.

UR 2: Is developing new roads into unroaded areas, decommissioning of existing roads, or changing the maintenance of existing roads causing substantial changes in the quantity, quality, or type of unroaded recreation opportunities?

Currently, there is no plan to develop, decommission, or change the maintenance of unroaded areas in the geographic area. There will be no effect on the quantity, quality, or type of unroaded recreational opportunities. Because no new roads are being developed in roadless areas, the character of existing roadless areas will be unchanged.

UR 3: What are the adverse effects of noise and other disturbances caused by developing, using, and maintaining, on the quantity, quality, and type of unroaded recreation opportunities?

There have been complaints by hunters on the adverse effect of ATV noise on hunting success.

UR 4: Who participates in unroaded recreation in the areas affected by constructing, maintaining, and decommissioning roads?

The Forest users include: non-motorized trail users, outfitter guides and clients, hunters (small and big game), anglers, horse users, organized horse club participants, and motorized trail users.

UR 5: What are these participants' attachments to the area, how strong are their feelings, and are alternative opportunities and locations available?

Attachments to these areas include: long-time use of same area; annual vacation event (hunting camp); income (outfitter/guide); source of trophy and/or food.

Feelings about these areas are strong and alternatives areas are not as desirable.

Users and their values were identified through: public scoping responses, recreation use surveys, and field personnel interviews/experience.

Road-Related Recreation (RR)

RR 1: Is there now or will there be in the future excess supply or excess demand for roaded recreation opportunities?

The current level of roaded recreational opportunities appears to be sufficient for the Elkhead Mountain Geographic Area. Much of this area exhibits low use during the summer months but much higher use during the fall hunting periods. During the summer months there may currently be an excess supply of roaded recreational opportunities, this supply should accommodate future needs.

RR 2: Is developing new roads into unroaded areas, decommissioning of existing roads, or changing maintenance of existing roads causing substantial changes in the quantity, quality, or type of roaded recreation opportunities?

Decommissioning existing roads that are in exceedingly poor condition are not significantly affecting roaded recreational opportunities because these roads get little use during most of the year with the exception of fall hunting seasons. Developing new roads into unroaded areas may impact recreationists seeking unroaded recreational experiences. Some hunters express dependence on road access for their hunting success.

RR 3: What are the adverse effects of noise and other disturbances caused by constructing, using, and maintaining roads on the quantity, quality, or type of roaded recreation opportunities?

For the majority of the year noise is not an issue with forest users in the analysis area. In the fall hunting season, noise (disturbance) is an issue to some forest users camping along or using remote roads when ATV travel is noisy and frequent during hunting hours. Other forest recreationists have complained of excessive ATV use during the fall.

RR 4: Who participates in roaded recreation in the areas affected by road construction, changes in road maintenance, or road decommissioning?

Public land users from the communities of Baggs, Craig and Hayden are the primary roaded recreation users in the Elkhead Mountain Geographic Area. During the fall hunting season recreationists visit from across the Nation to hunt the area. Hunters would be most affected by changes in road availability. Closing roads may make access more difficult but also improve hunter success. The vast majority of the roaded recreationists use the primary access routes FDR 110 and FDR 150 and use this area for scenic drives, wildlife viewing and camping.

Users include: campers (camping with vehicle); hunters (small game, scouting, game retrieval, bringing in camp); driving for pleasure, sight-seeing; anglers (to access fishing spots); outfitter/guides (to bring in supplies, clients, retrieve game); Freeman and Sawmill campground and day use area users; private landowners; aging or disabled forest visitors; ATV users; 4x4 enthusiasts; some non-motorized users on less traveled roads (especially horse users).

RR 5: What are these participants' attachments to the area, how strong are their feelings, and are alternative opportunities and locations available?

The Forest users and their values were identified through: public scoping responses, unsolicited letters and phone conversations, public meetings, recreation-use surveys, and field personnel interviews/experience. A public scooping brochure was produced and approximately 5000 copies were distributed during 2000. Distribution was focused during the fall hunting seasons. The EMGA users include: campers (camping with vehicle); hunters (small and big game as well as game retrieval); sight-seeing; anglers; outfitter/guides (transporting supplies, clients, and game retrieval); and motorized recreationists (ATV, 4x4, and motorcycle enthusiasts); private landowners; aging or disabled forest visitors; and some non-motorized users on less traveled roads (especially horse users)

The participants' attachments to these roads in the analysis area may include: dependency on vehicles for forest experience (i.e., age, ability, amount of time); dependency on motorized access to retrieve game and transport hunting camp as well as supplies to desired location; business income (outfitter/guide); and access to private lands with no viable non-FS alternative.

The feelings about these roads can be strong that is both in favor of keeping all roads open for easy access and in favor of closing many of the roads to provide better experience (i.e., primitive camping or hunting).

Attachments to these areas include: long-time use of same area; annual vacation event (hunting camp); income (outfitter/guide); source of trophy and/or food.

Feelings about these areas are strong and alternatives areas are not as desirable.

Please see Appendix G for a summary of some key comments from the public identified during public scooping efforts.

PASSIVE USE VALUE (PV)

PV 1: Do areas planned for road constructing, closure, or decommissioning have unique physical or biological characteristics, such as unique natural features and threatened or endangered species (or cultural heritage resources?

Less than two percent of the Elkhead Mountain Geographic Area has been surveyed for cultural resources. Twenty sites are recorded in the area. Historic GLO plats and Routt National Forest maps show additional historic trails, roads, structures, and a campground that have not yet been recorded. Many more unrecorded cultural resources are expected in the area. Site specific survey is recommended when there is the potential to effect cultural resources.

PV 2: Do areas planned for road construction, closure, or decommissioning have unique cultural, traditional, symbolic, sacred, spiritual, or religious significance?

The cultural heritage maps show no burials, traditional cultural properties, or sacred sites in the geographic area. Only the people who hold these values can identify them, so consultation with groups that may hold these values is needed to identify these places.

PV 3: What, if any, groups of people (ethnic groups, subcultures, and so on) hold cultural, symbolic, spiritual, sacred, traditional, or religious values for areas planned for road entry or road closure?

The cultural heritage maps show no burials, traditional cultural properties, or sacred sites in the geographic area. Only the people who hold these values can identify them, so consultation with groups that may hold these values is needed to identify these places.

PV 4: Will constructing, closing, or decommissioning roads substantially affect passive-use value?

Passive-use value is divided into two components, existence value and bequest value. Existence value is value or benefit people receive from the existence of a specific place, condition, or thing, independent of any intention, hope, or expectation of their active use by the person receiving the passive-use benefit. Bequest value is value or benefit received because a place, condition, or thing is available for active or passive use by others. The California Park Special Interest Area has both existence and bequest values because of the riparian and upland community of bird species that it supports such as Sandhill cranes, Columbian sharp-tailed grouse, and Northern goshawks. This area also holds historic values such as the historic cattle drive trails.

SOCIAL ISSUES (SI)

SI 1-2: What are people's perceived needs and values for roads and access? How does road management affect people's dependence on, need for, and desire for roads and access?

The primary social demand for roads in the analysis area is access for fall big game hunting. The secondary social demand for roads is summer use of dispersed campsites adjacent to the road system. The recreationists perceived values for these roads are strong. The public and hunters contacted through personal interview during hunter patrol, public meeting, and comment letters have strong attachments to the area and return year after year. Comments received from the public regarding this area pertain to providing appropriate access for recreationists and hunters with disabilities, health concerns, and senior citizens. Conversely, comments were received regarding a desire for more primitive hunting with less interference from All Terrain Vehicles. Complaints by hunters regarding excessive use of All Terrain Vehicles during hunting hours or providing access to areas that backpack hunters have hiked to either by road or trail has been a source of conflict within this user group.

SI 3: How does the road system affect access to paleontological, archaeological, and historical sites?

Closing roads protects cultural resources by decreasing the number of people in the area, thereby reducing collection and other forms of site damage. Closing roads in this geographic area does not adversely affect access for research or public education/interpretation.

SI 4: How does the road system affect cultural and traditional uses (such as plant gathering, and access to traditional and cultural sites) and American Indian treaty rights?

The cultural heritage maps show no burials, traditional cultural properties, or sacred sites in the geographic area. Only the people who hold these values can identify them, so consultation with groups that may hold these values is needed to identify these places.

SI 5: How are roads that constitute historic sites affected by road management?

A number of roads and trails in the geographic area are historic. A project specific cultural resource assessment should be completed for each undertaking, so the assessment can be tailored to each project. Generally, road closures or decommissioning does not affect historic roads unless ground disturbance is needed. Road construction, road realignments, and road upgrades may adversely affect historic roads. Project specific cultural resource assessments are recommended.

SI 6: How is community social and economic health affected by road management (for example, lifestyles, business, tourism industry, infrastructure maintenance)?

The seasonal use of the EMGA is primarily in the fall. The first, second, and third rifle seasons provide the towns of Craig and Hayden with income to local, business owners such as grocery, gas stations, restaurants, camping supplies, outfitter/guides, and hotels. Some of these business owners rely heavily on hunter and outdoor tourism industry to maintain their income throughout the remainder of the year. Direct effects to income of these business owners would be felt if there was major changes in road management. Major changes in road management may displace hunters to other National Forest areas or private land. Road maintenance, seasonal closures, and/or decommissioning of minor roads would have no economic effect to these businesses.

SI 7: What is the perceived social and economic dependency of a community on an unroaded area versus the value of that unroaded area for its intrinsic existence and symbolic values?

Unroaded areas within the national forests have a variety of societal and economic values. Some people value natural resources existing in unroaded areas for the economic contribution afforded by their extraction such as timber, minerals, and roaded access; others value roadless areas for the contribution they provide in an undeveloped state such as increased solitude for people or refugia for plants and animals (USFS, 199b). The communities of Craig and Hayden are not dependent on forest natural resources in unroaded areas for social or economic mainstay.

SI 8: How does road management affect wilderness attributes including natural integrity, natural appearance, opportunities for solitude, and opportunities for primitive recreation?

Road management affects wilderness attributes and primitive recreation opportunities in many ways. The closure, presence, or addition of new roads and their management in proximity to wilderness areas can change the natural integrity and opportunities for solitude because of differences in vistas, amounts of noise and dust, and crowding (USFS, 1999b). The EMGA roads analysis has not identified roads in proximity to wilderness or roadless areas slated for closure, presence, or addition of roads.

SI 9: What are traditional uses of animal and plant species in the area of analysis?

Through public scoping no traditional uses of animal and plant species in the SCGA have been identified besides fall hunting activities and summer fishing activities. There may have been some historic use of the area for plant collection when the Ute tribe occupied the area. Plant species collected included Yampa root and osha. Grazing of domestic livestock has been a historic use of this area for at least the past 100 years.

SI 10: How does road management affect people's sense of place?

"Sense of place" describes the character of an area and the meaning people attach to it as well as integrates the interpretations of a geographic place, considering the biophysical setting, psychological influences (memory, choice, perception, imagination, emotion), and social and cultural influences (USFS 1999b). The scoping comments received have identified strong emotional attachment to areas within the EMGA. The big game hunters that return to this EMGA year after year predominantly return to the same hunting camp location or within proximity to that area. The sense of place for this user group may be affected if major changes to road management occur.

CIVIL RIGHTS AND ENVIRONMENTAL JUSTICE (CR)

CR 1: How does the road system, or its management, affect certain groups of people (minority, ethnic, cultural, racial, disabled, and low-income groups)?

The occasional summer recreationists and fall big game hunters primarily use the roads in the EMGA. The roads are used for access to dispersed campsites and to hunting areas. The public scoping identified no minority, ethnic, cultural, racial, disabled or low-income groups affected by changes in road management in the EMGA.

OPPORTUNITIES

This NFMA analysis identifies the opportunities for management actions to be considered in subsequent NEPA analyses for proposed projects in the analysis area. This document can be used with Appendix A to prioritize and identify opportunities for improvement projects. For example: Some roads are important for recreation but are impactive to watershed resources. These roads could be improved. Other roads are not used much by the public or Forest Service and causing impacts to watershed, fisheries and wildlife, these roads should be closed or decommissioned. NEPA analysis will be required to explore the different opportunities and to disclose the effects of these opportunities on all resources.

CONCLUSION

The USFS Roads Analysis provides a useful tool to asses and prioritize road related projects in a geographic area. This document should provide the purpose and need for future projects and help in prioritizing the implementation of projects. The background provided in this document and the public scoping associated with this effort should greatly facilitate NEPA project issue identification and assessment of the existing condition. Now go and do good things for the land.

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APPENDIX A: Roads Matrix

Elkhead Mountain Geographic Area Resource Priority Roads Matrix

Road #	Pvt access (X)	Currently Closed (X), (o) =open	Forest Plan Rx	Important for fuels mgmt/ fire sup.	Wildlife	AQ Ques. #	Decom miss for watershed	WIN Project	Maintenance for H2O	Important for sumr. rec.	Important for fall rec.	Maintain for timber mgmt.	Impact on fisheries / aquatics	Important for range mgmt
99		X	5.13	H	L/Elk					M	H	H		H
99.1A			5.13	H	L/Elk					L	L	H		L
109.3C		X	5.13	M	L/Lynx					L	L	M		L
109.3D		X	5.13	M	L/Lynx					L	L	M		L
112			4.3	H	N/G					H	H	L		H
112.2A			4.3	M	N/G					H	H	L		L
112.2B	X	X	4.3	H	N/G					Pvt.	Pvt.	L		L
112.2C			4.3	M	N/G					H	H	L		L
112.2D		X			N/G					L	M	L		L
134.1	X	X		H	L*					Pvt	Pvt	L		L
110			4.2	H	N/G	3-4=H		X	X	H	H	H		H
138			5.11	M	N/G					M	H	M		M
110.3A			5.11	L	N/G					M	H	L		L
110.3B			5.11	H	N/G					L	M	M		L
110.3C			5.11	M	N/G					L	H	M		M
116			5.11	H	M/Elk					M	H	H		H
116.1A			5.11	H	L/Elk					L	M	M		L
116.1D		X	5.11	H	N/G					L	L	M		L
116.1E		X	5.11	M	L/Elk/ Gos					L	L	M		L
116.1F		X	5.11	L	L/Elk/ Gos					L	L	M		L
157.1					N/G									L
157.1A		X			L/Lynx									L
123				H	N/Poor Cond					M	H	L		M
150			4.2	H	M*	4.6=H		X	X	H	H	H		H
41			2.1	L	N/G					L	M	L		L
115	X	X	2.1	H	N/G					L	L	L		L
115.1A	X	X	2.1	H	N/C					Pvt	Pvt	L		L
150.2D			2.1	M	H	1-3=H	X			L	L	L		M
150.2E			2.1	L	H*							L		L
150.2F			2.1	L	N/G					M	M	L		L
150.2H		X			N/G					L	M			L
Knowles					M*/ Other									L
151			2.1	H	H/Elk*					M	H	L		H
153			4.3	H	N/G					M	M	M		M
153.1A		X	2.1	M	L/Lynx					M	M	L		L
153.1B		X	2.1	L	L*					L	L	L		L
117			4.3	M	N/G					M	H	L		M
42			2.1	H	M*					M	H	H		H

RATIONALE FOR RESOURCE MANAGEMENT PRIORITIES:

- H=High
- M=Moderate
- L=Low

Fuels Management and Access for Fire Suppression (Safety)

- H = Important for access to manage fuels and fire suppression
- M = Moderate importance for managing fuels and for fire suppression
- L = Roads is less important for managing fuels and for fire suppression

Wildlife Matrix- Effects on Wildlife (Positive, negative, assessment of effects).
Note *: An asterisk next to priority indicates specific recommendation.
General

- N/G = No specific concern, general effect in spruce-fir or aspen habitat
- N/C = No specific concern, maintain closure
- L = General effect and disturbance to wildlife. (Low*- Roads 153.1B and 134.1: Maintain closure- obliterate or decommission to improve elk hunting success and decrease riparian impacts.)
- M = Important for elk calving and sandhill cranes nesting. Medium*- Maintain spring wildlife closure (April 15 – July 1) for Roads 42 and 150. (Rd. 150- Recommend road closure expansion to include North boundary of Slater Park.)
- H = Impacts boreal toad, cutthroat trout, sandhill crane habitats. Recommend decommissioning of revegetation. (High*-Rd. 150.2E: close spur within 100 M of creek, recommend creating a hardened dispersed site.)

Elk

- L/Elk = May be contributing to elk movement off of the forest due to hunting pressure in the fall, seasonal closure may alleviate.
- M/Elk = Ridgeline road – may contribute to early season elk movement off of the Forest, seasonal closure may alleviate.
- H/Elk* = Road 151- Resource damage occurs on last ½ mile of road. Degrades prime elk hunting habitat. Recommend closing last ½ mile and improving surface on remainder of road.

Lynx

- L/Lynx = Increasing fragmentation in lynx habitat – recommend decommissioning or revegetation to improve.

Goshawk

- L/Gosh = Road is adjacent to historic goshawk territory – human use of road may impact future nesting.
- H/Gosh = Impacting Northern goshawk nesting stand, recommend decommissioning or revegetation to mitigate.

Other

- M*- Knowles road- Recommend drawing back, enforce closure, and create hardened dispersed site.

Hydrology and Soils (AQ question number)

- H = Known problems such as erosion, rutting, or obvious groundwater interception
- M = Less severe problems or moderate level of stability in valley-bottom roads
- L = Stable mid-slope roads
- X = Decommission for watershed; WIN project; or important for maintenance of water.

Recreation Summer, Fall, and Winter Priority

- H = High priority (summer or fall); part of summer loop routes; fall hunter use; no alternative routes
- M = Moderate priority; Some current summer use; some fall use
- L = Low priority; Closed; or low current use; or viable alternative route available

NOTE: No roads were listed in any recreational-use category. All roads had low winter use and were not listed in this matrix. In the winter, roads are physically closed to motorized use except snowmobiles. If a road is closed or decommissioned, the route will remain available for snowmobile use.

Timber Management

- H = High use for timber management (arterial and collector)
- M = Moderate-use of roads
- L = Roads rarely used

Impact on Fisheries and Aquatic Organisms

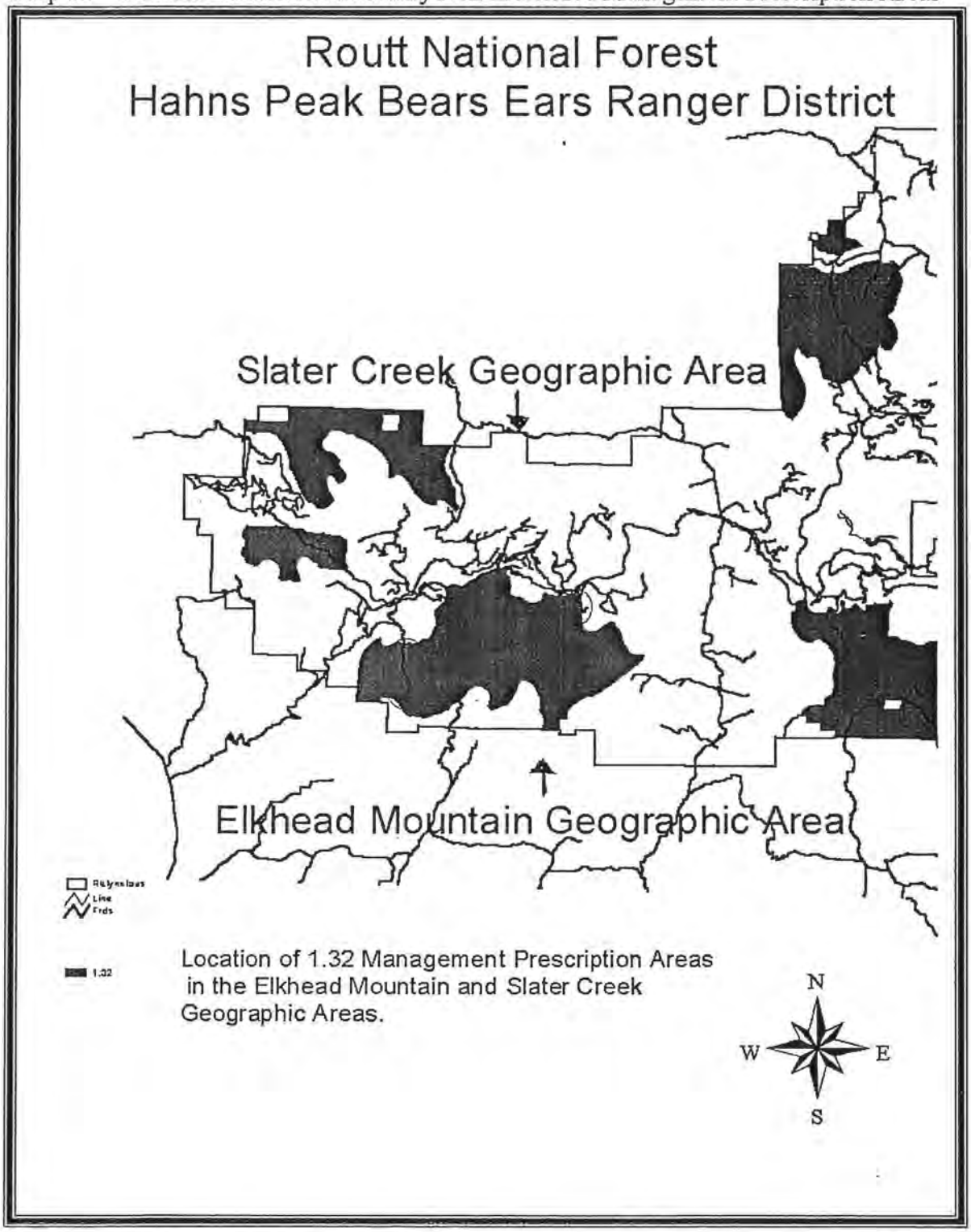
H = Roads that severely impact fisheries or aquatic organisms
M = Roads that moderately impact fisheries or aquatic organisms
L = Roads that have less impact on fisheries or aquatic organisms
X = Roads affect migration and movement of aquatic organisms.
O = Roads facilitating the introduction of non-native aquatic species.

Range Management

H = Important for access to range allotments
M = Other routes are available for access to allotments
L = Roads rarely used by permittees

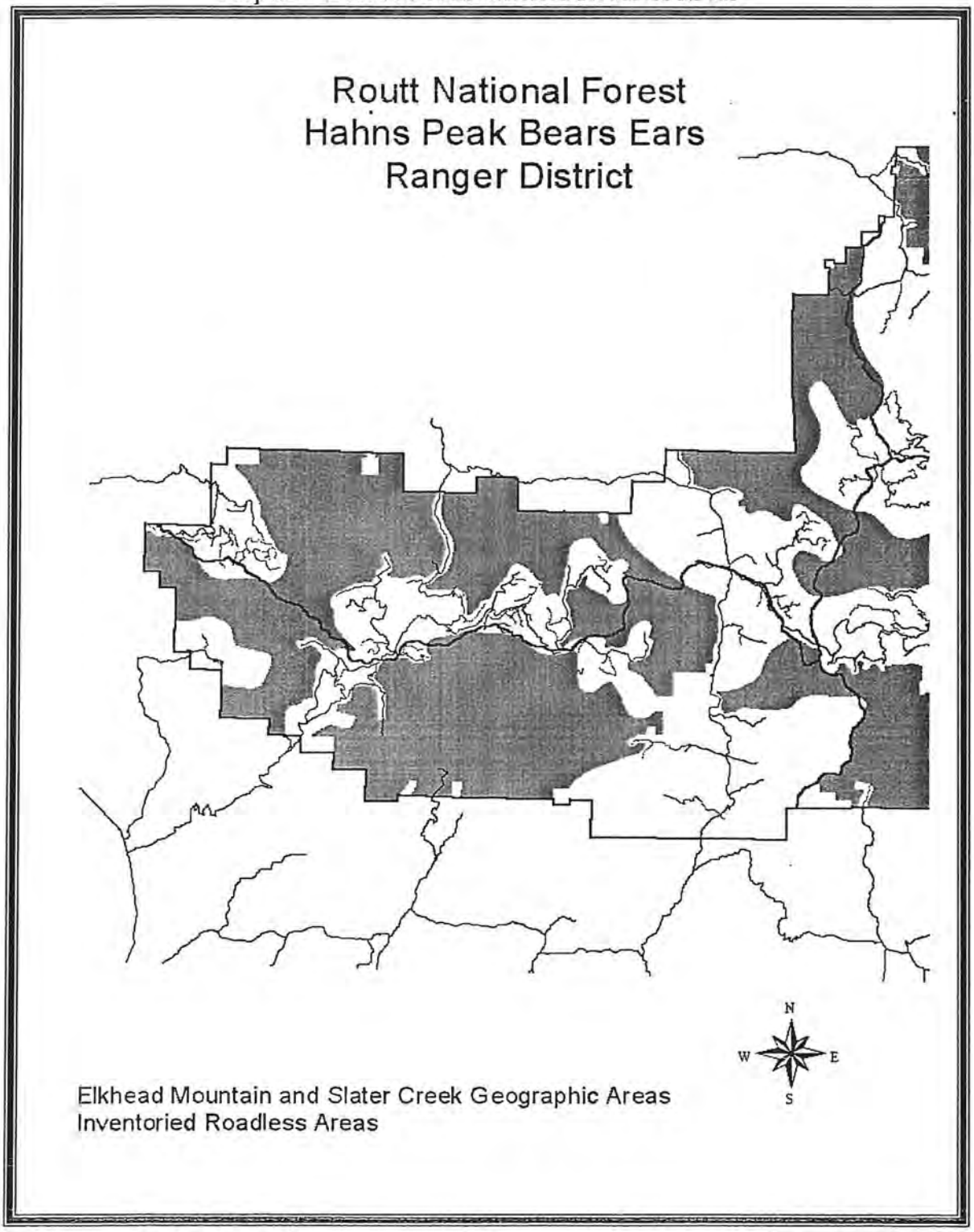
APPENDIX B: Maps

Map #2 – Location of 1.32 Backcountry Non-motorized Management Prescription Areas



APPENDIX B: Maps

Map #3 – Location of Inventoried Roadless Areas



Appendix C: Noxious Weeds Present on the Medicine Bow/Routt National Forests

Common Name	Scientific Name	Designated State Weed	Forest Priority*
Diffuse knapweed	*Centaurea diffusa*	WY, CO	1
Spotted knapweed	*Centaurea maculosa*	WY, CO	1
Russian knapweed	*Centaurea repens*	WY, CO	1
Leafy spurge	*Euphorbia esula*	WY, CO	1
Yellow toadflax	*Linaria vulgaris*	WY, CO	1
Dalmation toadflax	*Linaria genistifolia*	WY, CO	1
Saltcedar	*Tamarix ramosissima*	WY, CO	1
Hoary Cress	*Cardia spp.*	WY, CO	2
Musk thistle	*Carduus nutans*	WY, CO	2
Purple Loosestrife	*Lythrum salicaria*	WY, CO	2
Canada thistle	*Cirsium arvense*	WY, CO	3
Ox-eye-daisy	*Chrysanthemum leucanthemum*	WY, CO	3
Field bindweed	*Convolvulus arvensis*	WY, CO	3
Houndstongue	*Cynoglossum officinale*	WY, CO	3
Quackgrass	*Agropyron repens*	WY, CO	4
Skeletonleaf bursage	*Ambrosia tomentosa*	WY	4
Common burdock	*Arctium minus*	WY, CO	4
Plumeless thistle	*Carduus acanthoides*	WY, CO	4
Bull Thistle	*Cirsium vulgare*	WY, CO	4
St. Johnswort	*Hypericum perforatum*	WY, CO	4
Dyers woad	*Isatis tinctoria*	WY, CO	4
Perennial pepperweed	*Lepidium latifolium*	WY, CO	4
Scotch thistle	*Onopordum acanthium*	WY, CO	4
Perennial Sowthistle	*Sonchus arvense*	WY, CO	4
Horsenettle	*Solanum carollinense*	WY	4

* Forest Priority

Priority 1 indicates weeds of highest priority for treatment and eradication if possible on National Forest System Lands. In areas where known infestations of these weeds occur on adjacent non-Forest lands, prevention and monitoring activities will be given highest priority, and all efforts possible will be made to coordinate control efforts, and to cooperate with and encourage the adjacent land owner or manager to treat their infestations.

Priority 2 indicates weeds, which are increasing on National Forest System Lands. Efforts here will be to prevent new infestations and to contain or reduce existing infestations. Purple Loosestrife is not currently known to exist on the Medicine Bow-Routt, but its rapid increase on the front range makes our Forest a prime candidate for new infestations. Efforts here will be to spot infestations as soon as possible and to work toward eradication if infestations occur.

Priority 3 indicates weeds, which are so common and widespread that eradication is not possible. Efforts here will be directed toward prevention of new infestations.

Priority 4 indicates weeds, which are not currently known to occur on National Forest System Lands. Prevention will be the focus for these weeds.

APPENDIX XX: Deferred Maintenance Costs

Still waiting on this information

Deferred maintenance cost table

APPENDIX D: Responsibility Table

The following reiterates Table 1 from the R2 Roads Analysis guidance with the addition of the 'Lead' listed in the last column. The Lead is the person responsible for seeing that this analysis question gets addressed in the analysis.

Table 1. Summary of Analysis Questions

(A) Question #	(B) Topic	(C) Forest Plan	(D) Plan EIS	(E) Specific in EIS?	(F) Subforest/ Common Issue	(G) Page #	(H) Lead
EF1	Exotics						Robert
EF2	pest management						Robert
EF3/4	disturbances						Robert
EF5	Noise						Robert
AQ1	hydrology						Liz S.
AQ2	surface erosion						Liz/Tommy
AQ3	mass wasting						Liz/Tommy
AQ4	crossings						Liz S.
AQ5	chemical effects						Liz S.
AQ6	hydro connections						Liz S.
AQ7	beneficial uses						Liz S.
AQ8	wetlands						Liz S.
AQ9	Channel dynamics						Liz S.
AQ10	aqua. organisms						Kathy
AQ11	Riparian/litterfall						Liz S.
AQ12	at-risk species						Kathy
AQ13	non-native aquatic						Kathy
AQ14	unique species						Kathy
TW1	terrestrial habitat						Missy/Robert
TW2	human activities						Missy/Robert
TW3	legal/illegal activities						Missy/Robert
TW4	unique communities						Missy/Robert
EC1	Financial efficiency						NEPA Proj.
EC2	economic efficiency						NEPA Proj.
EC3	distribution						NEPA Proj.
TM2	suitable base						Kent
TM3	silvicultural treatment						Kent
TM1	logging systems						Kent
MM1	Minerals						Tommy

(A)[i] Question #	(B) Topic	(C) Forest Plan	(D) Plan EIS	(E) Specific in EIS?	(F) Subforest/ Common Issue	(G) Page #	(H) Lead
RM1	Range						Marnie
WP1	water facilities						Liz S.
WP2	municipal watershed						Liz S.
WP3	hydroelectric						Liz S.
SP1	special products						Lands
SU1	special uses						Lands
GT1	Access						Missy
GT2	other owners						Missy
GT3	shared ownership						Missy
GT4	Safety						Missy
AU1	Research, M&I						Missy/Robert
AU2	law enforcement						Robert
PT1	Fuels						Glenn
PT2	Safety						Glenn
PT3	wildfire cooperators						Glenn
PT4	air quality						Glenn
UR1	supply/demand						Rec Shop
UR2	unroaded opp's						Rec Shop
UR3	Noise						Rec Shop
UR4	Who participates?						Rec Shop
UR5	attachments						Rec Shop
RR1	supply/demand						Rec Shop
RR2	roaded opp's						Rec Shop
RR3	Noise						Rec Shop
RR4	Who participates?						Rec Shop
RR5	attachments						Rec Shop
PV1	unique characteris.						Missy
PV2	unique cultural						Joann
PV3	Groups						Joann
PV4	passive use value						Missy
SI1/2	needs/values roads						Robert
SI3	historical						Joann
SI4	Cultural						Joann
SI5	historic roads						Joann
SI6	economic health						Robert
SI7	community depend.						Robert

(A)[i] Question #	(B) Topic	(C) Forest Plan	(D) Plan EIS	(E) Specific in EIS?	(F) Subforest/ Common Issue	(G) Page #	(H) Lead
SI8	wilderness attribute						Robert
SI9	traditional uses						Robert
SI10	sense of place						Missy
CR1	civil rights						Missy

[i]

A *The question*
B *Abbrev. Topic label*
C *Typically, this question is used in the development of the FP*
D *Direction in EIS relates generally to this question*
E *Direction in EIS relates specifically to this question*
F *x = analysis should be done at subforest scale (read project level)*
yes = it is a common issue and you must address it in this analysis
no = it is not a common issue; address if raised in scoping
G *Page reference from Roads Analysis publication*
H *Suggested lead to address question -- to be done by IDT*

Appendix E: Documentation Table

Documentation Table for Step 4 of the Roads Analysis procedures. (from Miscellaneous Report FS-643).

Question #	Addressed in Analysis? (YES/NO)	If directly addressed, page # in Environmental Document; and/or S&G, or location in Forest Plan.	If indirectly addressed, location in Project Administrative Record.	Rationale for not addressing - location in Project Administrative Record.
EF1	Yes			
EF2	Yes			
EF3	Yes			
EF4	Yes			
EF5	Yes			
AQ1	Yes			
AQ2	Yes			
AQ3	Yes			
AQ4	Yes			
AQ5	Yes			
AQ6	Yes			
AQ7	Yes			
AQ8	Yes			
AQ9	Yes			
AQ10	Yes			
AQ11	Yes			
AQ12	Yes			
AQ13	Yes			
AQ14	Yes			
TW1	Yes			
TW2	Yes			
TW3	Yes			
TW4	Yes			
EC1	No			Will be answered in individual project EA/EIS
EC2	No			Will be answered in individual project EA/EIS
EC3	No			Will be answered in individual project EA/EIS
TM1	Yes			
TM2	Yes			
TM3	Yes			
MM1	Yes			
RM1	Yes			
WP1	Yes			
WP2	Yes			

WP3	Yes			
SP1	Yes			
SU1	Yes			
GT1	Yes			
GT2	Yes			
GT3	Yes			
GT4	Yes			
AU1	Yes			
AU2	Yes			
PT1	Yes			
PT2	Yes			
PT3	Yes			
PT4	Yes			
UR1	Yes			
UR2	Yes			
UR3	Yes			
UR4	Yes			
UR5	Yes			
UR6	Yes			
RR1	Yes			
RR2	Yes			
RR3	Yes			
RR4	Yes			
RR5	Yes			
RR6	Yes			
PV1	Yes			
PV2	Yes			
PV3	Yes			
PV4	Yes			
SI1	Yes			
SI2	Yes			
SI3	Yes			
SI4	Yes			
SI6	Yes			
SI6	Yes			
SI7	Yes			
SI8	Yes			
SI9	Yes			
SI10	Yes			
CR1	Yes			

Appendix F: Comments from Public Scoping

Comments Received on the Management of Roads and Trails in the California Park and Black Mountain Areas Brochure

- We have never used ATV's and we feel the closing of trail 1144 was a benefit to our hunting experience this past year. We noticed more animals in the Grizzly Park/Douglas Creek area and we feel it was a result of closing trails and the lack of logging.

- It is my opinion that the roads and trails in the study area should not be restricted any more than current. I don't currently own or use an ATV, however I may want to do so in the future and I don't want to see any more restriction that may limit the use of these vehicles by me in the future. I am a snowmobiler during the winter in the study area and one of my concerns is that a one size fits all rule will come down restricting the use of snowmobiles in the subject area. By closing roads and trails to motorized vehicles, hunters will be displaced to other areas rather than deal with the restrictions that does not reduce the elk population it reduces human population. Maybe the Division of Wildlife should look at some innovative ways to increase harvest.

- I do not think a total closure is in order. I do believe and understand the damage that can occur with wet trails, however at this time of the year, the trails were adequately frozen in the a.m. to where an ATV or other small weight vehicle would have done as much damage to one of the trails as the ATV would have done to a paved road. I restricted my hunt to areas close enough to pull the animal out by hand. I would suggest the trail closure ALLOW game retrieval on frozen roads and trails as an allowance to increase the harvest. I recommend a special hunting permit for hunters who did not fill their tags during the regular season. The DOW could guide hunters onto animals to thin the herd.

- I don't believe closing areas for a time will improve the management. Part of the problem of temporary closure often leads to permanent closure! Once we get permanent closure, multiple use is denied to many. Even with temporary, multiple use is denied to many.

- The restrictions would limit some of the early prime snowmobiling on the north side of Black Mountain.

- As a backpack elk hunter, I have had four-wheelers seriously affect my last two years of hunting in the Shield Mountain area. In 1999 and 2000, the elk were present in the area when we set up our camp. In both years we witnessed four-wheelers traveling off trail and the elk immediately left the area. I recommend closing the 496 road to all motorized vehicles, erosion has made the road nearly impassable. Perhaps the elk would not move as quickly to the Three Forks Ranch.

- Cattle cause as much or more soil erosion as motorcycles and ATV use. Are you going to kick them out too?

- I believe there are many factors that encourage elk to gather on Three Forks and Gold Blossom for the rut, none of which include motorized use in the area. The sheep drove us out of upper Johnson Creek maybe the elk didn't like them either.

- The archery hunters aren't pushing elk onto the private ranches the elk are there when the season starts. The ranchers cultivate the elk's presence on their property in many subtle ways and why not, its big money for them.

- Archery hunters followed by black powder muzzleloader hunters are harassing the herds in Area 4 and 5. It would be nice if the DOW would cut the number of hunters way down to stop harassing and chasing the herds. Don't close these roads to the public. Just limit the number of hunters and the length of the total hunting period to about six weeks total.

- It is only fair to keep the 1144 trail open to motorcycles and ATV's in this area, for it is the only motorized trail. In comparison to the Hahns Peak area which has many motorized trails.

- The spring closure of California Park for crane nesting season already limits the public's time spent in this area. The few roads open to the public does not hurt or chase any game animals by normal public use other than hunting. Let's urge the DOW to limit the number of hunters and especially the length of season to six weeks.

- The problem with easy access is that it attracts the slob hunters as was evident again this year. I now hunt only in areas banning motorized vehicles which is difficult, but rewarding.

- I think closing roads and trails would end my hunting if I had to walk further than we already did, because all the trails and roads were closed to ATV's and we could not use the ATV we brought along.

- I have witnessed private landowners and people who lease the adjacent land herding the elk through use of ATV's and on horseback onto their land so their clients could harvest these elk. Please enforce the law on game harassment so that there is elk on public land for all to hunt and enjoy.

- Closing trails and roads in a lot of areas would limit my hunting because of my age. An ATV is very handy to retrieve game.

SLATER CREEK GEOGRAPHIC AREA ROADS ANALYSIS

Medicine Bow-Routt National Forest
Hahn's Peak-Bears Ears Ranger District

June 25, 2001

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and

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INTRODUCTION

In August 1999, the Washington Office of the USDA Forest Service published Miscellaneous Report FS-643 titled "Roads Analysis: Informing Decisions about Managing the National Forest Transportation System". The objective of roads analysis is to provide decision makers with critical information to develop road systems that are safe and responsive to public needs and desires, are affordable and efficiently managed, have minimal negative ecological effects on the land, and are in balance with available funding for needed management actions.

In October 1999, the agency published Interim Directive 7710-99-1 authorizing units to use, as appropriate, the road analysis procedure embodied in FS-643 to assist land managers making major road management decisions. The Rocky Mountain Region of the Forest Service then published a roads analysis guidance document as a supplement to Appendix 1 of FS-643. This document provides guidance concerning the appropriate scale for addressing the roads analysis.

Background

The initiation of the Slater Creek Geographic Area (SCGA) Roads Analysis was in part due to travel management concerns raised by the California Park Work Group. Several projects were identified by the workgroup that have issues related to roads and road management. These projects include watershed improvement, recreation, and wildlife management. To evaluate and possibly implement these projects, a Roads Analysis is needed to identify and prioritize these potential projects. California Park Special Interest Area (CPSIA) lies within both the Slater Creek and Elkhead Mountain Geographic Areas. The Geographic Area scale was determined to be the most appropriate scale of analysis, in order to fully evaluate the transportation system affecting the CPSIA. Furthermore, a Geographic Area scale roads analysis would be useful to many other projects that would occur within the SCGA in the future.

Purpose and Need

Although the roads analysis was initiated due to ecosystem management needs of the CPSIA, the roads analysis will benefit all resource areas in the geographic area. Roads analysis helps implement Forest Plans by identifying management opportunities that can lead to site-specific projects. For example, through a roads analysis the ID team may discover that the watershed adjacent to dispersed campsites would benefit by improving dispersed campsites with a hardened surface. A roads analysis can lead to projects such as interpretive education, range improvements, fire management, etc.

> *Purpose:* Roads analysis is an integrated ecological, social, and economic science-based approach to transportation planning that addresses existing and future road management options. Roads analysis informs management decisions about the benefits and risks of constructing new roads in unroaded areas; relocating, stabilizing, changing the standards of, or decommissioning unneeded roads; access issues; and increasing, reducing or discontinuing road maintenance.

Need: Roads analysis is important to identify the important travel systems; maintenance of individual roads and the cost effectiveness of maintaining; identifying public and private access needs, and the ecological impact of roads on the SCGA.

Products

The product of this analysis is a report for decision makers and the public that documents the information and analyses used to identify opportunities and set priorities for future National Forest road system management decisions. Included in this report is a map displaying the known road system for the SCGA analysis area, and the risks and opportunities for each road or segment of road. The goals of this SCGA analysis are as follows:

Goals

- Identify important travel systems for social, economic, range, recreation, wildlife, timber, and fire management purposes and maintain these roads in a cost effective manner.
- Identify the need for accessing areas of SCGA that do not offer public or government access for purposes of timber, range, recreation, wildlife, or fire management.
- Identify roads that need maintenance for government and/or public access, but improvements are necessary.
- Identify roads causing resource damage where the decommissioning would benefit watershed, fishery, wildlife and sensitive species habitats.

Roads Analysis Process

Roads analysis is a six-step process. The steps are designed to be sequential with the understanding the process may require feedback and iteration among steps over time as an analysis matures. The amount of time and effort spent on each step differs by project based on specific situations and available information. The process provides a set of possible issues and analysis questions for which the answers can inform choices about road system management. Decision makers and analysts determine the relevance of each question, incorporating public participation as deemed necessary. The six-step process followed by the Interdisciplinary Team is as follows:

Step 1. Setting up the analysis

- Identify IDT
- Statement of objectives
- Identify scale/analysis area
- Develop plan for analysis
- Identify basic information needs

Step 2. Describing the situation

- Describe existing road system
- Description of access needs

Step 3. Identifying issues

- Identify important road-related issues
- Identify specific information needed to address these concerns

Step 4. Assessing benefits, problems, and risks: the 72 questions

- Systematically examine the major uses and effects of the road system
- Develop synthesis of benefits, problems, and risks of current and new roads

Step 5. Describing opportunities and setting priorities

- Identify management opportunities
- Formulate technical recommendations
- Establish priorities: roads matrix

Step 6. Reporting

- Report describing management opportunities and priorities
- Map of management opportunities

EXISTING CONDITION

Description of the Slater Creek Geographic Area Analysis

The Slater Creek Geographic Area makes up a large proportion of the Bears Ears side of Hahns Peak-Bears Ears Ranger District. The Slater Creek Geographic Area encompasses 65,525 acres of Forest land and is located just north of the Elkhead Mountain Geographic Area in the Northwest portion of the Routt National Forest. The forested cover is composed of: spruce-fir (43%), aspen (34%), and lodgepole (8%). Within the forested area, 60% is considered late successional. Grass, forbs, and shrubs make up 13% of the area, which is high compared to surrounding areas. This area includes valuable late successional habitat for marten and goshawk.

Unique features include:

- Slater Creek Macro Preliminary Conservation Planning Area.
- Populations, some genetically pure, of Colorado River cutthroat trout.
- Historic grazing use. The California Park Road follows the route of the "Old Beef Trail," a major cattle drive route to Wyoming prior to 1900.
- An electronic site along the boundary common to this geographic area and the Elkhead Mountain geographic area.
- Slater Creek Falls.
- Low motorized travelway density of lower standard roads. Primary access provided by Forest Roads 116, 118, and 133.
- High recreational use with pack stock in dispersed sites during hunting season.

Table 1: Management Area Prescription Allocation - Slater Creek Geographic Area			
	Management Area Prescription	**Acres**	**Percent of Total Area**
1.32	Backcountry Recreation, Non-motorized	14,518	22
2.1	Special Interest Areas	5,620	9
3.31	Backcountry Recreation, Motorized	3,580	5
4.2	Scenery	3,089	5
4.3	Dispersed Recreation	1,760	3
5.11	General Forest and Rangelands-Forest Vegetation Emphasis	26,662	41
5.13	Forest Products	8,981	14
	Nonfederal Land	1,316	2
	Total	65,525	100

Source: GIS (ARC/Info), allocation and geographic area layers

Existing road system

The roads that affect or provide direct access to the Analysis Area include the following Forest Development Roads (FDR)/County Roads (CR):

Table 2: Moffatt County and FDR Roads		
CR 82 (FDR 150)	CR 82 (FDR 110)	CR 129 (FDR 487)
CR 62 (FDR 42)	CR 109 (FDR 99 and 109)	CR 129 (FDR 496)

The roads within the Analysis Area are as follows:

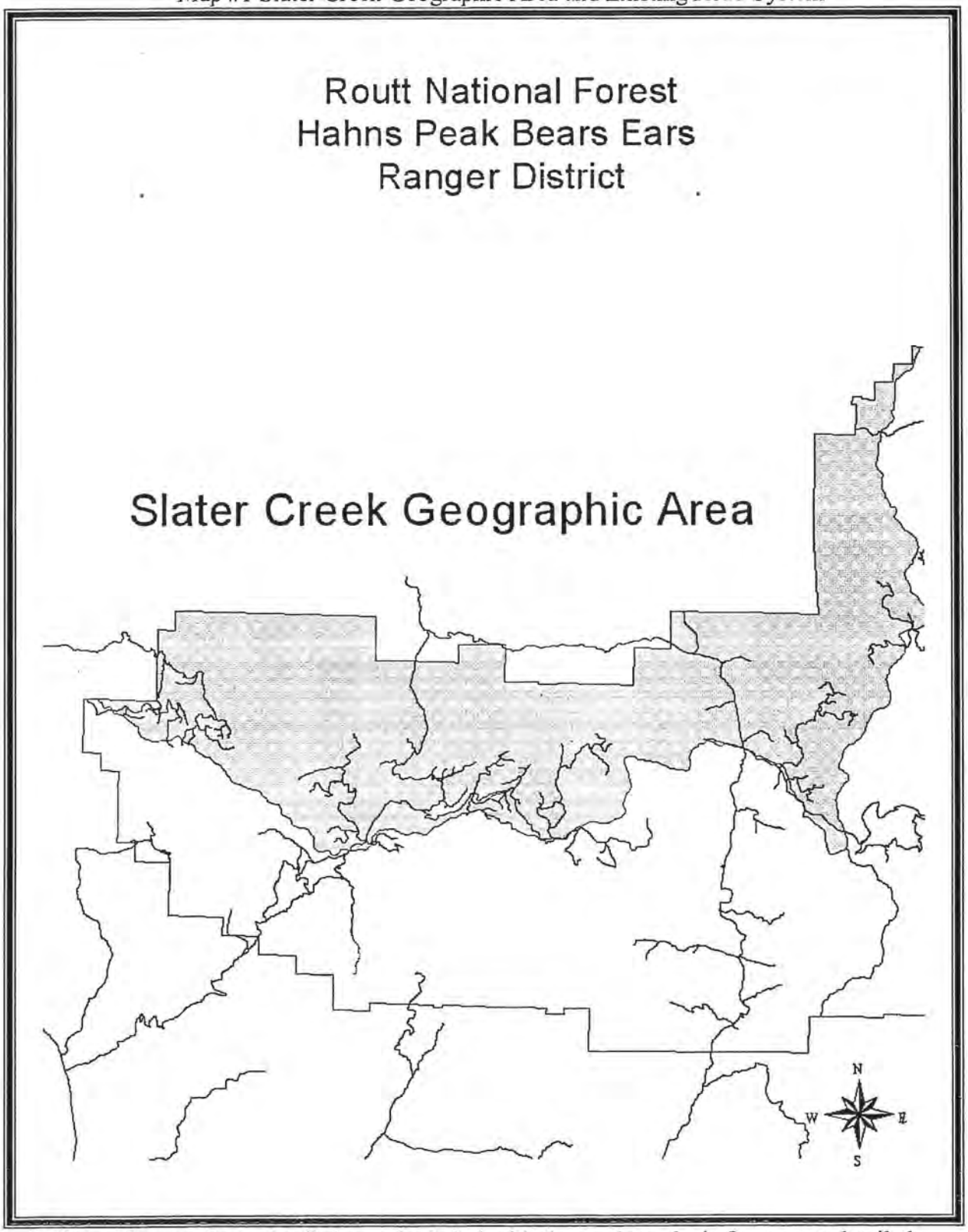
Table 3: FDR Roads within the Slater Creek Geographic Area								
99	110	157	116	161	122	138	134	117
42	153	116	150	151	115	41	112	123

The above list of roads does not include spur roads. For an overview of all roads in the SCGA see map included with this roads analysis.

Desired Condition of Slater Creek Geographic Area Roads

The desired condition of roads in the SCGA as stated in the Routt Forest Plan are to maintain roads at a low to medium density that will provide access primarily for timber and grazing uses and for dispersed recreation across most of the area. Road standards will accommodate vehicles ranging from light trucks and utility vehicles to commercial vehicles. No roads will exist in the portion allocated to backcountry non-motorized recreation. The areas seen from Forest Road 116, 118, and 133 and from certain recreation sites will have a natural appearance. Human-caused disturbance will not be apparent in areas allocated to backcountry non-motorized recreation. Management activities will be readily apparent in areas allocated to forest products and general forest and rangeland. The area will provide year-round motorized and non-motorized recreation opportunities, with the heaviest use in fall and winter. High-quality dispersed motorized and non-motorized recreation opportunities will be available year-round. The northeastern and northwestern portions will provide backcountry non-motorized opportunities. Visitor interaction will be infrequent.

Map #1 Slater Creek Geographic Area and Existing Road System



Note: Please refer to detailed map included with the roads analysis for a more detailed description of the existing road system.

SUMMARY OF ROAD RELATED ISSUES

The following summarizes issues and concerns of technical specialists, managers, and the public related to the road system.

Access for timber management: Current access for timber and bark beetle management is sufficient to meet current needs. It is unclear if current road density will meet future needs. Several old logging roads may not be needed for active management and may be contributing to impacts to watershed, fisheries and wildlife habitats. These roads are identified in the roads matrix and improving closures or decommissioning should be considered

Social and recreation concerns: The Slater Creek Geographic Area has a relative low level of summer recreational use. The unroaded areas are becoming increasingly important for people seeking solitude and avoiding crowded forest areas closer to Steamboat Springs. This area is of high importance for use during the fall hunting periods. Many impacts occur to the road system during the hunting periods because of the heavier use when roads become saturated with fall rain and snow.

Watershed concerns: There are several areas that have been identified in the roads matrix (appendix A) that are resulting in impacts to watersheds. Reducing these impacts is very important for restoring the health of the Slater creek watershed. Many impacts can be resolved by improving and upgrading road conditions, others decommissioning or closing may be necessary.

Wildlife: Several of the roads in the Slater Creek Geographic Area are contributing to the movement of elk off the Forest during the fall hunting season. This results in decreased hunter success and limited control over a growing elk population. Seasonal or permanent closure of key roads may help to maintain elk on the Forest, increase hunter success, and help reduce the elk herd. Some timber management areas have high road density that is increasing the fragmentation of lynx habitat. Decommissioning and revegetating these roads would improve lynx habitat. A few roads are impacting nesting goshawk territories, seasonal or permanent closure is recommended to alleviate these effects. Appendix A identifies and prioritizes the roads and the wildlife issues

Private land access: the current road system provides adequate access to private land and private land inholdings.

Road maintenance and decommissioning costs: Road maintenance can be very costly. Many of the roads in the Slater Creek Geographic Area are significantly impacted during the wet fall hunting periods by motorized vehicles. This annual impact has made it expensive and prohibits annual maintenance of all roads used by hunters during the fall. This has resulted in continued deterioration of road conditions and impacts to other resources such as watershed. An example of this is the Adams creek road. Seasonal or permanent closure would decrease these high impacts and costs.

ASSESSMENT OF EFFECTS – "The 72 Questions"

To assess the effects of roads in the analysis area, the process described in Step 4 from: "Roads analysis: informing decisions about managing the National Forest transportation system" (USFS, 1999a) was used. The Region 2 Roads Analysis Guidance package (USFS, 2000) provided additional guidance in addressing these questions. Detailed information such as field surveys to support the findings in this section can be found in the project file.

ECOSYSTEM FUNCTIONS AND PROCESSES (EF)

EF1: What ecological attributes, particularly those unique to the region, would be affected by roading of currently unroaded areas?

Areas without roads are relatively rare in this region of Colorado. Unroaded areas provide important wildlife habitats with reduced human related disturbance. Many of the unroaded areas contain unstable soils that may negatively impact the watersheds and riparian function in the area if roading occurred. It is likely that roading unroaded areas in this geographic area would displace wildlife to private lands and habitats of lower quality. Large lower elevational areas are uncommon in this region of Colorado and therefore these areas are important controls for evaluating effects of road construction and use in other areas of the geographic area.

EF2: To what degree do the presence, type, and location of roads increase the introduction and spread of exotic plant and animal species, insects, diseases, and parasites? What are the potential effects of such introductions to plant and animal species and ecosystem function in the area?

The presence and number of roads adjacent to disturbed areas, early successional areas, riparian areas, or streams increases the chances of the introduction or spread of exotic plant, fish, and animal species, insects, diseases, and parasites. The introduction and spread of noxious weeds is often through transference of seeds or plants to early successional or disturbed areas by vehicles, humans, and domestic animals. Loss of biodiversity due to the introduction of non-native species is currently thought to be the primary factor leading to decline of native biodiversity. Noxious weeds are easily transported onto National Forest System lands in the mud and dirt attached to visitors vehicles. Seeds of these weeds can become dislodged during rainstorms thus rapidly increasing the spread of these noxious plant species.

As discussed in the Noxious Weed Implementation Plan (USDA Forest Service, 2000), "noxious weeds are any plant which has been designated by a federal, state, or county government to be injurious to public health, agriculture, recreation, wildlife, or any public or private property [see Appendix C for list of noxious weeds on the Forest]. They can dominate native plant communities to the extent plant diversity and ecosystem integrity are threatened.

Noxious weeds occur throughout most plant associations and geographic areas of the Forest. In general, noxious weeds are most common in areas where human activity is having, or has had, the greatest impact on soil and vegetative resources and/or where human activities have resulted in the introduction of seed sources.

Ground disturbing activities or areas where herbaceous cover has been removed are the sites most susceptible to noxious weed invasion and spread. These areas include roadways, rock, or borrow pits, timber harvest areas, livestock, trailheads, ORV use sites, dispersed recreation campsites, areas where hay is fed to livestock, and areas where heavy vehicular traffic occurs."

Roads are frequently sources of noxious weeds, sites with high potential for new infestations, and effective means of spreading weeds and weed seeds to new, uninfested areas. Weed seeds can be picked up, transported, and deposited by vehicles, in mud sticking to the vehicle, in wheels, and in other parts of the undercarriage of the vehicle. Existing weed infestations on the forest can be spread to other areas and new weeds can be introduced to uninfested areas. Although disturbed sites are more susceptible to noxious weed invasions, noxious weeds have become established in relatively undisturbed ecosystems as well (USDA Forest Service, 1998).

Noxious weed infestations can lead to the establishment of undesirable vegetation monotypes, and to declines in watershed conditions. As noxious weeds outcompete native and desired vegetation, wildlife and livestock forage amounts and qualities can decline. The natural diversity in plant species composition can also decline. The presence of roads in an area requires more diligent monitoring and treatment of noxious weeds, to avoid or at least minimize the adverse effects of noxious weed infestations. This obviously requires an investment of money and people's time.

The road system may contribute to the spread of diseases such as whirling disease and chytrid fungus by providing access to streams and wet areas. Whirling diseases could potentially wipe out populations of cutthroat and rainbow trout and the chytrid fungus could have the same effect to boreal toads and other amphibian species. Roads providing easy access to streams may result in increased unauthorized stocking of non-native fish species.

EF3-4: How does the road system affect ecological disturbance regimes in the area? To what degree does the presence, type, and location of roads contribute to the control of insects, diseases, and parasites?

Engelmann spruce bark beetle (SBB) and mountain pine beetle (MPB) are increasing in the Slater Creek Geographic Area. Epidemic populations of SBB are expected over the next several years. Existing roads in timber management areas, including roads closed to the public will improve the ability for the Forest Service to manage this epidemic. Most Forest roads in timber management prescription areas (5.11 and 5.13) are high quality

roads that will allow efficient access to areas of infestation. A recent Draft EIS for the bark beetle management includes a proposal for some road construction (approximately 7 miles) in the eastern portion of the geographic area. Please refer to the Bark Beetle EIS for more information on this proposal.

EF5: What are the adverse effects of noise caused by developing, using, and maintaining roads?

The Slater Creek Geographic Area generally gets relatively low public use outside of hunting season. Current level of summer use and maintenance is not having any significant ecological effects. Fall use may impact roads during this typically wet season. There is a high level of disturbance to wildlife from public use of these roads during the fall hunting seasons. This disturbance usually results in elk herds leaving the Forest and moving to private lands. This has resulted in decreased hunter success and comments and concern from the public regarding this problem. Early spring use is disturbing to calving elk and nesting sandhill cranes in the Slater Park Area. Comparing wildlife use between the closed California Park area and the Open roads in the Slater Park area clearly illustrates the effects of springtime recreational disturbance. Road development typically has high but short-term effects due to the actual development disturbance but often long-term significant ecological effects to wildlife habitats.

AQUATIC, RIPARIAN ZONE, AND WATER QUALITY (AQ)

AQ1: How and where does the road system modify the surface and subsurface hydrology of the area?

Roads expand the channel network, convert subsurface flow to surface flow, and reduce infiltration on the road surface. These factors affect the surface and subsurface flow, and overall hydrology of an area. The channel network is expanded through road ditches which act as stream channels in previously unchannelized areas. Road ditches intercept shallow subsurface flow and convert it to surface flow which is delivered to the stream channel through road ditches. An expanded channel network augments peak flows since water traveling as surface flow reaches the channel faster than water traveling as subsurface flow (Wemple et al., 1996). Reduced infiltration contributes to additional surface flow since water does not infiltrate and become stored in the soil profile, but rather runs off as overland flow.

While all of the road drainage ditches modify the surface hydrology to a degree by creating additional surface flow paths, specific areas of concern include:

- FSR 156: Drainage on this road east of the Slater Creek crossing is inadequate. Water from the uphill side of the road is intercepted by the road, and then flows down the road until a drainage structure diverts water off the road and into a tributary to Slater Creek. Over time water running down the road has caused the road to become incised which results in a cycle of additional interception of subsurface flows which results in the road becoming more incised.

- FSR 118.1 at Grizzly Creek east road-stream crossing: In the past, beavers have plugged the culvert at this crossing. Water backs up behind the beaver dam and up into the road ditch until it crosses the drainage divide between the east and west forks of Grizzly Creek. A drainage structure on the side of west Grizzly Creek diverts the water under the road where it then flows overland down into the West Fork of Grizzly Creek. A beaver baffler was installed last fall on the East Fork of Grizzly Creek which, if it is maintained and functions properly, may alleviate this problem. This crossing should be monitored for maintenance needs, and to determine the effectiveness of the beaver baffler.

AQ2: How and where does the road system generate surface erosion?

Surface erosion is highly dependant on soils, road grade, road surfacing, and the effectiveness and spacing of drainage structures. Soils with little binder material, and long distances between drainage structures, particularly on steep slopes, are all factors, which contribute to surface erosion. There are opportunities at the following locations to reduce surface erosion and subsequent sedimentation to the stream system:

- FSR 156.1: Inadequate drainage results in surface erosion. This road has become incised which makes improving drainage to reduce surface erosion more difficult.

- FSR 154.1: This road on the north side of Slater Creek has inadequate drainage, particularly for the steepness of the road grade. As a result, surface erosion occurs, and eroded materials are delivered directly to the stream system at the FDR 154.1-Slater Creek road-stream crossing. Additional drainage structures are needed to reduce surface erosion and delivery of sediment to Slater Creek at this connected disturbed area.

- FSR 118.1, section managed as a level 2 road: inadequate drainage coupled with native surface materials result in surface erosion on much of this road. Sediment derived from surface erosion is being delivered directly to Grizzly Creek at road-stream crossings. Due to the location of this road, improving drainage will be difficult, particularly in the area of Grizzly Park.

- FSR 110.4e: Inadequate drainage is resulting in erosion of the road surface. If this process continues, the investment of the road will be lost, and it will not be suitable for future use.

- FSR 163.1: Surface erosion is occurring on both approaches to the FDR 163.1-West Prong Creek road-stream crossing. A headcut has developed in the road ditch on the west side of the road-stream crossing as a result of inadequate drainage. There are opportunities to reduce both surface erosion and the quantity of sediment delivered to the stream system at this road-stream crossing.

- FSR 133.1a: This is a steep road in which portions of the road run down the fall-line. Surface erosion is severe on the steeper sections of this road resulting in

gullying of the road surface. Due to the location of the road relative to the fall-line, reducing surface erosion will be difficult.

AQ3: How and where does the road system affect mass wasting?

The primary effect of the road system to mass wasting is by changing the subsurface flow of water as well as removes the toe of the slope, which causes mass movement. Roads should be constructed to avoid areas that are very prone to mass movement or if that cannot be done, use management practices to stabilize the slope.

- FSR 156.1 Road is up against unstable slope. Move trailhead down the road and convert the road to a trail.
- FSR 118.1 Road is located in mudflow. If we want to keep it open, it will be high maintenance.
- FSR 110.1 between FSR 133 and FSR 116. Area is unstable and will require more work if we want to keep it open.
- FSR 110.1 just above lower South Fork of Slater Creek road-stream crossing. This area will need some more work to keep this road functioning. Has a history of moving and will continue in the future if not remedied.

AQ4: How and where do road-stream crossings influence local stream channels and water quality?

The primary effects to local stream channels and water quality at road-stream crossings are due to 1) changes in the natural hydrologic function of the stream channel due to channel constriction, misalignment relative to the natural channel pattern, or improperly sized culverts, and 2) delivery of sediment directly to the stream channel through connected disturbed areas which degrades water quality. Connected disturbed areas are defined as 'high runoff areas such as roads... that discharge surface runoff into a stream... connected disturbed areas are the main source of damage in all regions' (FSH 2509.25-99-2).

There are opportunities as the following locations to reduce the effects of road-stream crossings on local stream-channels and water quality:

- FSR 156.1: The Slater Creek road-stream crossing has resulted in local widening of the channel which has had a localized effect on channel dynamics.
- FSR 154.1 at the Slater Creek crossing: Slater Creek recently blew through FDR 154.1 in the vicinity of this road-stream crossing (see AQ 9 for more detail). This resulted in two road-stream crossings at this location, both of which are sources of sediment and degrading water quality.

- FSR 133.1 at West Prong road-stream crossing: The culvert at this location appears to be too small, and improperly set. As a result, spring peak flows back up at this location and deposit large quantities of sand-sized sediment. This culvert is constricting flow and affecting the natural hydrologic function of the channel.

- FSR 118.1 at Grizzly Creek west fork road-stream crossing: This road-stream crossing has been a chronic problem. Currently there is a low-water crossing which adequately passes the flows, but both approaches as well as the stream-crossing are soft, and need to be hardened. Inadequate drainage on the road on both approaches is delivering sediment directly to the stream system.

- FSR 110.1 near lower end of Lost Park: The road crosses a small intermittent channel just above the FSR 110.1-South Fork of Slater Creek road-stream crossing. A headcut has developed below the intermittent channel road-stream crossing, and sediment eroded from this headcut is delivered directly to the South Fork of Slater Creek. The headcut drains into a small spur road off of FSR 110.1 which accesses a dispersed campsite located on the banks of the South Fork of Slater Creek. Both the headcut from the intermittent channel road-stream crossing and the dispersed site are affecting water quality at this location. Opportunities include fixing the headcut, and managing or closing the dispersed campsite to protect the banks of the South Fork of Slater Creek.

- FSR 163 at West Prong Creek road-stream crossing: As mentioned in AQ2, drainage is inadequate on both approaches to this road-stream crossing resulting in delivery of sediment directly to West Prong Creek through this connected disturbed area. There is still a culvert at this road-stream crossing which is having a local effect on hydrologic function.

- Unclassified road-stream crossing on Upper West Prong Creek: This road was decommissioned, but the culverts were not removed. The culvert at the identified road-stream crossing is inadequate to pass spring peak flows. As a result, water is running around the outside of the culvert as well as over the road prism. Removing the culvert and reshaping the banks would restore the hydrologic function and reduce sedimentation derived from water running around the outside of the culvert and over the road surface.

AQ5: How and where does the road system create potential for pollutants, such as chemical spills, oils, deicing salts, or herbicides, to enter surface waters?

All road-stream crossings and areas where roads are adjacent to streams are potential sites for pollutants to enter surface waters. However, there are no locations where this is a significant concern.

AQ6: How and where is the road system "hydrologically connected" to the stream system? How do the connections affect water quality and quantity?

Water quality and quantity are affected where connected disturbed areas deliver water and sediment directly to the stream channel. Most of the locations affecting water quality and quantity are identified in AQ 1, AQ2, and AQ4. In addition, the following location is a connected disturbed area that is affecting water quality and quantity:

- FSR 150.1- unclassified spur road near Armstrong Creek: This unclassified road is part of an old road system that accessed a homestead on the west side of Elkhead Creek. A carsonite post at the Elkhead road-stream crossing indicates that this road has been technically closed, although there are signs of occasional use. This road accesses a couple of dispersed campsites, including one immediately adjacent to Elkhead Creek in the floodplain. The road runs down the fall-line as it drops from the high terrace down to the floodplain. Drainage is inadequate in this section of road, resulting in gullying of the road surface. Sediment derived from the gullying is delivered directly to Elkhead Creek at the road-stream crossing. Opportunities to reduce sedimentation and impacts to water quality include closing the road on the upper terrace before it drops down to the floodplain. There are still opportunities for dispersed camping on the terrace while reducing effects to water quality in Elkhead Creek.

AQ7: What downstream beneficial uses of water exist in the area? What changes in uses and demand are expected over time? How are they affected or put at risk by road-derived pollutants?

State designated beneficial uses for the Slater Creek geographic area include aquatic cold life 1, recreation 2, water supply, and agriculture. None of the streams are listed as impaired on the Colorado 303(d) list (CDH, 1998), although the South Fork of Slater Creek is on the state monitoring and evaluation list. Streams are placed on this list when there are reasons to suspect water quality problems, but uncertainty exists regarding one or more factors. Sediment derived from roads is one of the factors contributing to the potential concern.

There are no other expected changes in demand or use over time. Road derived pollutants may be increasing sediment deposition which may affect the aquatic cold life 1 designated beneficial use.

AQ8: How and where does the road system affect wetlands?

Wetlands were included as part of the Routt Riparian Inventory (RNF, 1993). Map XX displays the road network relative to the stream network and riparian areas including potential wetlands. Field reconnaissance found that there are no locations where the road system is significantly affecting wetland condition or function.

AQ9: How does the road system alter physical channel dynamics, including isolation of floodplains, constraints on channel migration, and the movement of large wood, fine organic matter, and sediment?

AQ 4 identifies road-stream crossings where the road system is affecting channel dynamics. One additional area of concern is where FSR 154.1 has constrained channel migration. Slater Creek recently blew through FDR 154.1 in the vicinity of the Slater Creek road-stream crossing. The road created a weak point on the outside of a meander bend. Over time, Slater Creek eroded the outside of the meander bend and eventually eroded all the way through FSR 154.1. A new channel was developed with the following effects: 1) The new channel is much shorter than the existing channel. Shortening stream channels increases water slope which increases stream power and the energy available for streambank erosion. 2) The new channel contributed approximately XX cubic yards of sediment to Slater Creek below the blowout. 3) The new channel re-enters Slater Creek perpendicular to the old channel. This results in the current flow being directed directly into one of the Slater Creek streambanks which is causing destabilization of this streambank, and contributing additional sediment to the stream channel. Opportunities to restore local stream channel function and reduce water quality impacts include returning the Slater Creek to its original channel.

AQ10: How and where does the road system restrict the migration and movement of aquatic organism? What species are affected and to what extent?

FDR 118:

- The culvert on Douglass Creek sits high causing a barrier to brook trout migration and is not low enough to provide the needed catch of water flow.
- The culvert crossing on an unnamed tributary of Grizzly Creek (T10N R88W S36 SW¼ of NW¼) is not affording fish migration or movement due to the culverts gradient of 5% and a six inch drop on the outlet end as well as the longer length of the culvert (30 ft).

FDR 42:

- The culvert on Slater Creek creates a barrier to fish migration. No fish were found above or below the culvert.

FDR 49:

- The culvert on a tributary of Slater Creek (T10N R87W S25 NW¼ of NE¼) is a barrier to Brook trout to spawning and rearing habitat.
- The culvert on 49.1B of the South Fork of the Little Snake River is not affording fish movement. The headwaters survey found no fish present.

FDR 110:

- The culvert on 110.4E of an unnamed tributary of the South Fork of Slater Creek (T10N R88W S29 SE¼ of SE¼) is a fish barrier.

FDR 133:

- The culvert on West Prong is hindering the ability for migration or movement of Cutthroat trout. Although no cutthroat trout were found directly above culvert, cutthroat trout were found in the upper tributaries.

AQ11: How does the road system affect shading, litterfall, and riparian plant communities?

The road system is affecting riparian plant communities at road-stream crossings, with the problem areas being identified in AQ4. There are additional concerns on FSR 118.2A. This spur road runs through the riparian meadow adjacent to Grizzly Creek, and is having localized effects on riparian condition. There may be opportunities to establish a trailhead near the intersection of FSR 118.1 and 118.2A, and decommission the rest of the road to reduce effects to the riparian meadow.

AQ12: How and where does the road system contribute to fishing, poaching, or direct habitat loss for at-risk aquatic species?

Although the road system provides several locations for fishing opportunities to small and large creeks and ponds, few recreational anglers visit this analysis area. The entire road system in the analysis area provides access to the aquatic habitats that may lead to poaching opportunities. Anywhere the road system crosses a stream or wet area will provide potential for poaching opportunities of fish or other aquatic species. However, there are no locations where this is a significant concern.

The road system may cause indirect habitat loss to at-risk aquatic species by increasing sedimentation in adjacent streams. The increased sedimentation can cause habitat loss by changing stream flow and riparian vegetation composition, which in turn may reduce available cover, rearing, and spawning habitat for at-risk aquatic species. The FDR 48A and culvert is causing increased sedimentation to the Cutthroat fishery of the Slater Creek headwaters.

AQ13: How and where does the road system facilitate the introduction of non-native aquatic species?

Anywhere the road system crosses a stream or wet area and there is enough suitable habitat to support a species long enough for it to migrate to a more desirable habitat is where the road system would facilitate the introduction of non-native aquatic species.

AQ14: To what extent does the road system overlap with areas of exceptionally high aquatic diversity or productivity or areas containing rare or unique aquatic species or species of interest?

FDR 150 along Slater Creek overlaps with the designated Slater Creek Macro Preliminary Conservation Planning Area. This area was designated in part due to the exceptional riparian and aquatic species found in this area including both plant communities and animal species assemblages. There are impacts from dispersed recreational camping occurring in these areas that may be increasing erosion and sedimentation

TERRESTRIAL WILDLIFE (TW)

TW1: What are the direct effects of the road system on terrestrial species habitat?

The general direct effects include population isolation, edge effects, habitat loss and fragmentation and reducedhabitat effectiveness. These direct effects can:

1. Isolate populations of species with low mobility, such as the boreal toad, depending on the type of road and the level of use.
2. Increase the presence of edge species (birds, mammals, plants). An increase in edge species can result in greater predation risk to animals in forested ecosystems. For example, the opening of habitat and creation of edge may make species such as red squirrel and snowshoe hare more vulnerable to avian predation from species such as red-tailed hawks that would not typically forage in a closed forest canopy. Additionally, some wildlife species will avoid crossing roads, which limits the available habitat to wildlife. Edge effects from roads can be most pronounced in forested landscapes.
3. Fragmentation can result in both the direct effects of loss of habitat, decrease connectivity of populations, increase predation, result in higher demographic stochasticity and change population structure from contiguous habitats to isolated metapopulations.
4. Use of the roads by people can result in increased disturbance and avoidance of roaded habitats.
5. Presence of roads increase winter snowmobile use in an area due to the constructed road prisim. This results in disturbance to wildlife during critical winter periods. Increases compacted snow routes and may facilitate the movement of competitors of lynx (ie – coyote) into lynx habitat,
6. Road construction will decrease elk and deer habitat effectiveness by reducing security areas. The elk habitat effectiveness in the Slater Creek geographic Area is presented below.

Elk Habitat Effectiveness

		OPEN RD DENSITY	ROAD DENSITY	% HABITAT	EFFECTIVENESS
GEOGRAPHIC AREA	H.C. INDEX	MILES/SECTION	(RDI) INDEX	EFFECTIVENESS	Standards and Guidelines
Slater Creek (1A) overall	0.717850	0.85	0.65	46.66	50% STANDARD
Slater Creek 5.11	0.755625	0.81	0.65	49.12	60% Guideline
Slater Creek 5.13	0.660750	1.37	0.55	36.34	50% Guideline

TW2: How does the road system facilitate human activities that affect habitat?

In general, the analysis area road system provides access for permitted fire wood collection which reduces density of snags and/or area where snags are present due to removal near roads, as facilitated by road access (Hann and others, 1997). Fire wood collectors often harvest snags or down logs that provide habitat for pine martens, owls, and woodpeckers. Firewood collectors reduce habitat for these species in areas where roads are in close proximity. No particular area has been identified where this is a concern.

The road system facilitates human activities that result in disturbances to wildlife. Elk are known to leave the area during the fall due to increased human activities on ridgeline roads and roads that run into interior forested habitats. This results in elk and deer unable to use habitats during the fall periods.

Roads provide the prism for winter snowmobile use. Winter snowmobile use on these roads increases snow compaction, which might facilitate coyote moving into suitable lynx habitat.

TW3: How does the road system affect legal and illegal human activities? What are the effects on wildlife species?

In the SCGA, the motorized use of roads during the fall hunting seasons as well as the increased pressure by the hunters has negatively impacted big game in this area. The elk respond to this increased pressure by leaving National Forest land and moving to adjacent private land where they remain throughout the hunting seasons. The elk heard in this SCGA are beyond the desired herd objective set by the Colorado Division of Wildlife.

Open roads facilitate access for legal hunting and trapping. Effects include direct human caused mortality and injury from hunting and trapping activities. Closed but not decommissioned or obliterated roads increase human access, including illegal use of closed roads by ATV's. This has been demonstrated to be problematic on many of the closed roads in the Slater Creek Geographic Area during the hunting season. Closed roads increase hiking and mountain biking activities in areas not usually accessed by humans. This can result in disturbance to wildlife species

TW4: How does the road system directly affect unique communities or special features in the area?

Within the SCGA are the Slater Park Macro Preliminary Conservation Planning Area (SPMPCPA) and the California Park Special Interest Area (CPSIA). The CPSIA was selected for designation based on it geological, zoological, historical, paleontological, and scenic values. The CPSIA contains the highest diversity of threatened, endangered, and Region 2 sensitive species on the Routt National Forest.

The SPMPCPA is one of three macro sites identified by the Colorado Natural Heritage Program for the Routt National Forest. The SPMPCA boundary was delineated to identify significant natural communities and the breeding habitat of wetland and upland birds and amphibians in need of protection and specific management. The Colorado Natural Heritage Program designated this areas as such due to the rarity of the species the community supports.

ECONOMICS (EC)

EC (1): How does the road system affect the agency's direct costs and revenues? What, if any, changes in the road system will increase net revenue to the agency by reducing cost, increasing revenue, or both?

This analysis will be completed as part of individual project EA/EIS.

EC (2): How does the road system affect the priced and non-priced consequences included in economic efficiency analysis used to assess net benefits to society?

This analysis will be completed as part of individual project EA/EIS.

EC (3): How does the road system affect the distribution of benefits and costs among affected people?

This analysis will be completed as part of individual project EA/EIS.

COMMODITY PRODUCTION (TM, MM, RM)

Timber Management

TM1: How does the road spacing and location affect logging system feasibility?

Existing roads allow for efficient logging, due to spacing and proximity to one another. Eliminating any of the existing roads would reduce logging feasibility due to increased logging costs (skidding). Also, non-ground based logging systems are dependent on roads adjacent to harvest units, again by reducing skidding costs.

TM 2-3: How does the road system affect managing the suitable timber base and other lands? How does the road system affect access to timber stands needing silvicultural treatment?

Approximately 50% of the analysis area is in the suitable timber base, mostly in MA 5.11. Roaded access in these areas has allowed for many timber sales in the past, over time and landscape to maintain healthy forested stands as well as provide primary access to other lands in the geographic area. Roads in place from previous entries are necessary for the continued forest management of the areas, but do not provide adequate access to other stands needing treatment. New road construction will be needed for future silivicultural treatments. Without roads, the opportunity for silvicultural treatments would be diminished and the area would need to be removed from the suitable timber base. There may be future need to access portions of the suitable timber base that is currently unroaded.

Minerals Management

MM 1: How does the road system affect access to locatable, leasable, and salable minerals?

The existing road system provides sufficient opportunity for access to locatable leasable and salable minerals.

Range Management

RM 1: How does the road system affect access to range allotments?

The existing road system provides sufficient access to range allotments for the permittees and the Forest Service rangeland managers. Most of the range allotments are only fully accessed by horseback. The current amount and distribution of roads is sufficient to allow efficient movement of livestock to and from the allotments, efficient trailering of horses to the allotments, and access for construction and/or maintenance of range improvements.

Many of the roads in the area are not needed for access to the allotments. See Appendix B for a listing of the roads and their importance to range management.

WATER PRODUCTION (WP)

WP1-3: How does the road system affect access, constructing, maintaining, monitoring, and operating water diversions, impoundments, and distribution canals or pipes, municipal watersheds, or hydroelectric projects?

There are no operating water diversions, impoundments, distribution canals, pipes, municipal watersheds or hydroelectric projects in the Salter Creek Geographic Area. These types of projects are not affected by the existing road system.

SPECIAL FOREST PRODUCTS (SP)

SP 1: How does the road system affect access for collecting special forest products?

Collecting special forest products often depends on using existing forest roads. These activities provide employment opportunities, but typically do not support developing or maintaining roads. The Slater Creek Geographic Area provides limited special forest products. The existing road system is sufficient to accommodate the current and predicted need.

SPECIAL USE PERMITS (SU)

SU 1: How does the road system affect managing special-use permit sites (concessionaires, communications sites, utility corridors, and so on)?

Special-use areas on national forest lands are by permit, for profit or are access needs to private land, which may include: commercial recreation (outfitter and guide services), communication sites, utility corridors, and right-of-ways for access to private land. Special-use permittees need for reasonable access to permit areas directly affects the

profitability of their business. Special-use permittees access needs require quick and efficient access.

Recreation Special-Use Permits:

- First Creek Ranch (Tracey Phillips) special-use permit is for packing game meat for clients. Although the permit is for district-wide, the permittee owns a private inholding along Quaker Mountain where access needs will be focused. Analysis area access needs include FDR 150 and 115 to Quaker Mountain.
- Rhynne Outfitters (Bruce Rhyne) special-use permit is for outfitter/guide for hunting, bicycling, and horse backriding. Access needs include, FDR 150 and 42 for big game hunter outfitter/guide services and FDR 110 and 133 for bicycling and horseback riding outfitter/guide services.
- Wilderness Tracks (Harley Johnson) special-use permit is for big game hunting outfitter/guide services. Access needs include, FDR 112.
- Jim Fagg special-use permit for big game hunting outfitter/guide services for one drop-camp. Access needs include, FDR 110 along Black Mountain Boundary.
- Sombrero Ranch special use-permit is for horse delivery to fall big game hunters. Access needs include, most roads in the analysis area as well as access to horse coral on FDR 110.

Other existing permits, which have access needs include:

- FDR 154.1 (private land)
- FDR 150.2I – Slater Creek (private land)
- FDR 150- ditches (no small roads needed for access)

GENERAL PUBLIC TRANSPORTATION (GT)

GT(1): How does the road system connect to public roads and provide primary access to communities?

The county road (CR) 80, connects with FDR 150, is the main public access to the analysis area for the Hayden community. FDR 150 is primarily a summer travel road and is not used as a road system that provides access to communities. The county road 27, connects with FDR 110 and 134, provides public access to the analysis area for the Craig and Hayden communities. FDR 110 and 134 are primarily summer travel roads and are not used as a year-round road system that provides access to Hayden and Craig communities. See table below for list of county roads that connect with forest roads. Note: The analysis area roads are primarily used during the summer and fall months and are closed during the winter. Snowmobiles are used for winter access and recreation.

Moffatt County Roads and Elkhead Mountain Geographic Area FDR		
CR 80 connects to FDR 150	CR 76 connects to FDR 123	CR 27 connects to FDR 110, 134
CR 11 connects to FDR 112	CR 56 connects to FDR 475	CR 62 connects to FDR 42

GT(2): How does the road system connect large blocks of land in other ownership to public roads?

The road system is not significant for connecting large blocks of land in other ownership. There is one private inholding in Slater Park, which is accessed by FDR 150. The Forest Service has worked out an arrangement with the owner to allow access through California Park during the springtime closure period.

GT(3): How does the road system affect managing roads with shared ownership or with limited jurisdiction? (RS2477, cost share, prescriptive rights, FLPMA easements, FRTA easements, DOT easements)

FDR 150 is managed by Routt County. FDR 150 is a county road. The Forest Service has an agreement with the County to maintain the spring time closure and assist when possible at maintaining culverts along the road.

GT(4): How does the road system address the safety of road users?

The road system safety conditions are consistent with road maintenance levels, as well as expected use and users. The road system is configured and signed to reduce safety hazards within the context of financial, topographic, and use levels. The roads that are currently damaged or eroded pose hazards to users during wet conditions and may become impassable. Highly impacted roads should be improved for safety or closed and decommissioned if use is determined to be low.

ADMINISTRATIVE USE (AU)

AU 1: How does the road system affect access needed for research, inventory, and monitoring?

The existing road system is adequate for needed research, inventory and monitoring.

AU2: How does the road system affect investigative or enforcement activities?

Investigative and law enforcement activities are minimal in the analysis area throughout the majority of the year, except for hunting season. A change in the road system may affect law enforcement by displacing hunters outside of the analysis area and into other portions of the district, which may increase the need for law enforcement in other areas during hunting season.

Closed roads, but not decommissioned or obliterated roads, increase illegal activities and thus increase the need investigation and enforcement of illegal use. Decommissioning and obliteration of unnecessary roads will facilitate enforcement activities by discouraging unauthorized use of closed roads.

PROTECTION (PT)

PT 1: How does the road system affect fuels managements?

Fuels management falls into two basic categories within this watershed. The Spruce-Fir at the higher elevations is actively managed as a timber resource, and the Aspen/grass/forbs and shrub vegetation groups at lower elevations.
Harvest activities with associated fuels treatments comprise most of the fuels management within these stands. These activities depend heavily upon the present road system and needs only minor temporary road development in some areas to allow fuels treatment. These temporary roads are generally built in association with the harvest requirements for timber sales.

The grazing that occurs on the lower elevation sites (aspen stands) is moderately dependent upon road access, so the roads are important for these activities as well. Grazing has a significant impact upon the fire hazard within these areas as much of the annual increase in biomass is removed each year. The present road system is sufficient to support these activities. Any decrease in road access may limit grazing utilization that would result with an increasing fire hazard within the aspen and shrub vegetation types.

The most critical fuels management concern within the watershed would be to continue effective fuels treatment activities within activity-generated slash.

PT 2: How does the road system affect the capacity of the Forest Service and cooperators to suppress wildfires?

This area has limited road access and much of the fire suppression efforts will be dependent upon either aerially delivered fire fighting resources or hand crews with an extended response time. Engines have a limited function within the Slater Creek Geographic Area.

Most suppression efforts within this watershed will be dependent upon hand crew resources. Some of the roads that do exist require high clearance vehicles and may limit the access to four-wheel drive vehicles only.

The biggest affect of the road system will be to delay response and extend contain/control times due to difficulties associated with logistical support.

PT 3: How does the road system affect risk to firefighters and to public safety?

There are no distinctive fire fighter or public safety risk associated with fire suppression within this geographic area. The road system provides for marginal access and regress, and to this road system is the one-way access or regress on forest road 116. Regress and evacuation could become a problem if severe fire behavior were to occur blocking the road during regress or evacuation efforts; however, this road system has no campgrounds or other specific forest-user destinations on it so this risk would be minimal. The risk to

fire fighters should also be easily mitigated by proper planning and the identification of safety zones as needed.

PT 4: How does the road system contribute to airborne dust emission resulting in reduced visibility and human health concerns?

Due to the limited use of this area and the distance of this geographic area from residential areas, airborne dust emission is not expected to result in a significant visual impact or an impact to human health.

RECREATION (UR, RR)

Unroaded Recreation (UR)

UR 1: Is there now or will there be in the future excess supply or excess demand for unroaded recreation opportunities?

Unroaded recreation is expected to increase in the future. The Forest is seeing increased use over the past few years of the unroaded recreational areas in the Slater Creek Geographic Area. These areas appear to becoming more and more important for folks trying to get away form increasingly crowded wilderness areas closer to towns such as Steamboat Springs. It is not known if the current supply of unroaded areas will meet the future demand for this recreational experience. Due to the rapid rate of human growth in this area, roadless areas are expected to become increasingly important for this need. Closures or decommissioning/obliteration of old roads in poor condition may help provide larger areas for recreationists seeking this type of experience.

UR 2: Is developing new roads into unroaded areas, decommissioning of existing roads, or changing the maintenance of existing roads causing substantial changes in the quantity, quality, or type of unroaded recreation opportunities?

The Bark Beetle EIS proposed to construct roads into currently unroaded portions of the suitable timber base in the North Eastern portion of the suitable timber base. This action may slightly decrease the opportunity for unroaded recreation in this geographic area.

UR 3: What are the adverse effects of noise and other disturbances caused by developing, using, and maintaining, on the quantity, quality, and type of unroaded recreation opportunities?

There have been complaints by hunters on the adverse effect of ATV noise on hunting success.

UR 4: Who participates in unroaded recreation in the areas affected by constructing, maintaining, and decommissioning roads?

The Forest users include: non-motorized trail users, outfitter guides and clients, hunters (small and big game), anglers, horse users, organized horse club participants, and motorized trail users.

UR 5: What are these participants' attachments to the area, how strong are their feelings, and are alternative opportunities and locations available?

Attachments to these areas include: long-time use of same area; annual vacation event (hunting camp); income (outfitter/guide); source of trophy and/or food

Feelings about these areas are strong and alternatives areas are not as desirable .

Users and their values were identified through: public scoping responses, recreation use surveys, and field personnel interviews/experience

Road-Related Recreation (RR)

RR 1: Is there now or will there be in the future excess supply or excess demand for roaded recreation opportunities?

The current level of roaded recreational opportunities appears to be sufficient for the Slater Creek Geographic Area. Much of this area exhibits low use during the summer months but much higher use during the fall hunting periods. During the summer months there may currently be an excess supply of roaded recreational opportunities, this supply should accommodate future needs.

RR 2: Is developing new roads into unroaded areas, decommissioning of existing roads, or changing maintenance of existing roads causing substantial changes in the quantity, quality, or type of roaded recreation opportunities?

Decommissioning existing roads that are in exceedingly poor condition are not significantly affecting roaded recreational opportunities because these roads get little use during most of the year with the exception of fall hunting seasons. Developing new roads into unroaded areas may impact recreationists seeking unroaded recreational experiences. Some hunters express dependence on road access for their hunting success.

RR 3: What are the adverse effects of noise and other disturbances caused by constructing, using, and maintaining roads on the quantity, quality, or type of roaded recreation opportunities?

For the majority of the year noise is not an issue with forest users in the analysis area. In the fall hunting season, noise (disturbance) is an issue to some forest users camping along or using remote roads when ATV travel is noisy and frequent during hunting hours. Other forest recreationists have complained of excessive ATV use during the fall.

RR 4: Who participates in roaded recreation in the areas affected by road construction, changes in road maintenance, or road decommissioning?

Public land users from the communities of Baggs, Craig and Hayden are the primary roaded recreation users in the Slater Creek Geographic Area. During the fall hunting season recreationists visit from across the Nation to hunt the area. Hunters would be most affected by changes in road availability. Closing roads may make access more difficult but also improve hunter success. The vast majority of the roaded recreationists use the primary access routes FDR 110 and FDR 150 and use this area for scenic drives, wildlife viewing and camping.

RR 5: What are these participants' attachments to the area, how strong are their feelings, and are alternative opportunities and locations available?

The Forest users and their values were identified through: public scoping responses, unsolicited letters and phone conversations, public meetings, recreation-use surveys, and field personnel interviews/experience. A public scooping brochure was produced and approximately 5000 copies were distributed during 2000. Distribution was focused during the fall hunting seasons. The SCGA users include: campers (camping with vehicle); hunters (small and big game as well as game retrieval); sight-seeing; anglers; outfitter/guides (transporting supplies, clients, and game retrieval); and motorized recreationists (ATV, 4x4, and motorcycle enthusiasts); private landowners; aging or disabled forest visitors; and some non-motorized users on less traveled roads (especially horse users)

The participants' attachments to these roads in the analysis area may include: dependency on vehicles for forest experience (i.e., age, ability, amount of time); dependency on motorized access to retrieve game and transport hunting camp as well as supplies to desired location; business income (outfitter/guide); and access to private lands with no viable non-FS alternative.

The feelings about these roads can be strong that is both in favor of keeping all roads open for easy access and in favor of closing many of the roads to provide better experience (i.e., primitive camping or hunting).

Attachments to these areas include: long-time use of same area; annual vacation event (hunting camp); income (outfitter/guide); source of trophy and/or food.

Feelings about these areas are strong and alternatives areas are not as desirable.

Please see appendix G for a summary of some key comments from the public identified during public scooping efforts.

PASSIVE USE VALUE (PV)

PV 1: Do areas planned for road constructing, closure, or decommissioning have unique physical or biological characteristics, such as unique natural features and threatened or endangered species (or cultural heritage resources)?

Less than two percent of the Slater Creek Geographic Area has been surveyed for cultural resources. Twenty-seven sites are recorded in the area. Historic GLO plats and Routt National Forest maps show additional historic trails, roads, structures, a sawmill, and a campground that have not yet been recorded. Many more unrecorded cultural resources are expected in the area. Site-specific survey is recommended when there is the potential to effect cultural resources. The area being planned for road construction associated with the Bark Beetle EIS may result in impacts to lynx habitat due to increased habitat fragmentation and access for competitive predators

PV 2: Do areas planned for road construction, closure, or decommissioning have unique cultural, traditional, symbolic, sacred, spiritual, or religious significance?

The heritage maps show no burials, traditional cultural properties, or sacred sites in the geographic area. Only the people who hold these values can identify them, so consultation with groups that may hold these values is needed to identify these places.

PV 3: What, if any, groups of people (ethnic groups, subcultures, and so on) hold cultural, symbolic, spiritual, sacred, traditional, or religious values for areas planned for road entry or road closure?

The heritage maps show no burials, traditional cultural properties, or sacred sites in the geographic area. Only the people who hold these values can identify them, so consultation with groups that may hold these values is needed to identify these places.

PV 4: Will constructing, closing, or decommissioning roads substantially affect passive-use value?

Passive-use value is divided into two components, existence value and bequest value. Existence value is value or benefit people receive from the existence of a specific place, condition, or thing, independent of any intention, hope, or expectation of their active use by the person receiving the passive-use benefit. Bequest value is value or benefit received because a place, condition, or thing is available for active or passive use by others. The California Park Special Interest Area has both existence and bequest values because of the riparian and upland community of bird species that it supports such as Sandhill cranes, Columbian sharp-tailed grouse, and Northern goshawks. This area also holds historic values such as the historic cattle drive trails.

SOCIAL ISSUES (SI)

SI 1-2: What are people's perceived needs and values for roads and access? How does road management affect people's dependence on, need for, and desire for roads and access?

The primary social demand for roads in the analysis area is access for fall big game hunting. The secondary social demand for roads is summer use of dispersed campsites adjacent to the road system. The recreationists perceived values for these roads are strong. The public and hunters contacted through personal interview during hunter patrol, public meeting, and comment letters have strong attachments to the area and return year after year. Comments received from the public regarding this area pertain to providing appropriate access for recreationists and hunters with disabilities, health concerns, and senior citizens. Conversely, comments were received regarding a desire for more primitive hunting with less interference from All Terrain Vehicles. Complaints by hunters regarding excessive use of All Terrain Vehicles during hunting hours or providing access to areas that backpack hunters have hiked to either by road or trail has been a source of conflict within this user group.

SI 3: How does the road system affect access to paleontological, archaeological, and historical sites?

Closing roads protects cultural resources by decreasing the number of people in the area, thereby reducing collection and other forms of site damage. Closing roads in this geographic area does not adversely affect access for research or public education/interpretation.

SI 4: How does the road system affect cultural and traditional uses (such as plant gathering, and access to traditional and cultural sites) and American Indian treaty rights?

The heritage maps show no burials, traditional cultural properties, or sacred sites in the geographic area. Only the people who hold these values can identify them, so consultation with groups that may hold these values is needed to identify these places.

SI 5: How are roads that constitute historic sites affected by road management?

A number of roads and trails in the geographic area are historic. A project specific cultural resource assessment should be completed for each undertaking, so the assessment can be tailored to each project. Generally, road closures or decommissioning does not affect historic roads unless ground disturbance is needed. Road construction, road realignments, and road upgrades may adversely affect historic roads. Project specific cultural resource assessments are recommended.

SI 6: How is community social and economic health affected by road management (for example, lifestyles, business, tourism industry, infrastructure maintenance)?

The seasonal use of the SCGA is primarily in the fall. The first, second, and third rifle seasons provide the towns of Craig and Hayden with income to local, business owners such as grocery, gas stations, restaurants, camping supplies, outfitter/guides, and hotels. Some of these business owners rely heavily on hunter and outdoor tourism industry to maintain their income throughout the remainder of the year. Direct effects to income of these business owners would be felt if there was major changes in road management. Major changes in road management may displace hunters to other National Forest areas or private land. Road maintenance, seasonal closures, and/or decommissioning of minor roads would have no economic effect to these businesses.

SI 7: What is the perceived social and economic dependency of a community on an unroaded area versus the value of that unroaded area for its intrinsic existence and symbolic values?

Unroaded areas within the national forests have a variety of societal and economic values. Some people value natural resources existing in unroaded areas for the economic contribution afforded by their extraction such as timber, minerals, and roaded access; others value roadless areas for the contribution they provide in an undeveloped state such as increased solitude for people or refugia for plants and animals (USFS, 199b). The communities of Craig and Hayden are not dependent on forest natural resources in unroaded areas for social or economic mainstay.

SI 8: How does road management affect wilderness attributes including natural integrity, natural appearance, opportunities for solitude, and opportunities for primitive recreation?

Road management affects wilderness attributes and primitive recreation opportunities in many ways. The closure, presence, or addition of new roads and their management in proximity to wilderness areas can change the natural integrity and opportunities for solitude because of differences in vistas, amounts of noise and dust, and crowding (USFS, 1999b). The SCGA roads analysis has not identified roads in proximity to wilderness or roadless areas slated for closure, presence, or addition of roads.

SI 9: What are traditional uses of animal and plant species in the area of analysis?

Through public scoping no traditional uses of animal and plant species in the SCGA have been identified besides livestock grazing, fall hunting activities and summer fishing activities. There may have been some historic use of the area for plant collection when the Ute tribe occupied the area. Plant species collected included Yampa root and osha. Grazing of domestic livestock has been a traditional use of the area over the past 100 years.

SI 10: How does road management affect people's sense of place?

"Sense of place" describes the character of an area and the meaning people attach to it as well as integrates the interpretations of a geographic place, considering the biophysical

setting, psychological influences (memory, choice, perception, imagination, emotion), and social and cultural influences (USFS 1999b). The scoping comments received have identified strong emotional attachment to areas within the SCGA. The big game hunters that return to this SCGA year after year predominantly return to the same hunting camp location or within proximity to that area. The sense of place for this user group may be affected if major changes to road management occur.

CIVIL RIGHTS AND ENVIRONMENTAL JUSTICE (CR)

CR 1: How does the road system, or its management, affect certain groups of people (minority, ethnic, cultural, racial, disabled, and low-income groups)?

The occasional summer recreationists and fall big game hunters primarily use the roads in the SCGA. The roads are used for access to dispersed campsites and to hunting areas. The public scoping identified no minority, ethnic, cultural, racial, disabled or low-income groups affected by changes in road management in the SCGA.

OPPORTUNITIES

This NFMA analysis identifies the opportunities for management actions to be considered in subsequent NEPA analyses for proposed projects in the analysis area. This document can be used with appendix A to prioritize and identify opportunities for improvement projects. For example: Some roads are important for recreation but are impactive to watershed resources. These roads could be improved. Other roads are not used much by the public or Forest Service and causing impacts to watershed, fisheries and wildlife, these roads should be closed or decommissioned. NEPA analysis will be required to explore the different opportunities and to disclose the effects of these opportunities on all resources.

CONCLUSION

The USFS Roads Analysis provides a useful tool to asses and prioritize road related projects in a geographic area. This document should provide the purpose and need for future projects and help in prioritizing the implementation of projects. The background provided in this document and the public scoping associated with this effort should greatly facilitate NEPA project issue identification and assessment of the existing condition. Now go and do good things for the land.

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APPENDIX A: Roads Matrix

Slater Creek Geographic Area Resource Priority Roads Matrix

Road #	Pvt access (X)	Currently Closed (X), (o) =open	Forest Plan Rx	Important for fuels mgmt/ fire sup.	Wildlife	AQ Ques. #	Decom miss for watershed	WIN Project	Maintenance for H2O	Important for sumr. rec.	Important for fall rec.	Maintain for timber mgmt.	Impact on fisheries / aquatics	Important for range mgmt
109			5.13	H	N/G					L	H	H		M
109.2A			5.13	M	N/G					L	L	H		L
99		X	5.13	H	L/Elk					M	H	H		H
99.1A			5.13	H	L/Elk					L	L	H		L
99.1B		X	5.13	M	N/G					L	M	M		L
99.1C			5.13	M	L/Elk					L	M	M		L
99.1D			5.13	M	L/Elk					L	M	M		L
99.1E		X	5.13	M	N/G					L	L	M		L
99.1F			5.13	M	L/Elk					L	L	M		L
109.3		X	5.13	M	H									L
109.3B				M	L/Lynx					L	L	H		L
109.3C		X	5.13	M	L/Lynx					L	L	M		L
109.3D		X	5.13	M	L/Lynx					L	L	M		L
109.3E		X	5.13	M	L/Lynx					L	L	M		L
94.1		X		M	L/Lynx					L	L	M		L
94.1A		X		M	L/Lynx					L	L	M		L
94.1B		X		M	L/Lynx					L	L	M		L
110			4.2	H	N/G	3-4=H		X	X	H	H	H		H
122			4.3/ 5.11	H	M/Elk/ Poor Cond.					L	M	M		M
163			5.11	M	L/Lynx	2=H 4=M		X		L	M	M		L
163.1A		X	5.11	M	L*					L	L	M		L
133			5.11	H	N/G	4=H			X	M	H	H		H
133.1A		X	5.11	M	L/Lynx	2=H		X	X	L	L	M		L
133.1B		X	5.11	M	L/Lynx					L	L	M		L
133.1C		X	5.11	M	L/Lynx					L	L	M		L
130.1		X		M	L/Lynx					L	L	M		L
162			4.2	M	N/G					M	M	L		L
110.4A			5.11	M	M/ Gosh*					L	L	L		L
110.4B			5.11	L	N/G					L	L	L		L
110.4C		X	5.11	M	L/Lynx					L	L	M		L
110.4D		X	5.11	L	L/Lynx					L	L	L		L
110.4E		X	5.11	M	L/Lynx	2=M			X	L	L	M		L
110.4F		X	5.11	L	L/Lynx					L	L	M		L
110.4G		X	5.11	L	L/Lynx					L	L	M		L
110.4H			5.11	M	N/G					L	L	M		L
110.4J			5.11	L	N/G					L	L	L		L
116			5.11	H	M/Elk					M	H	H		H
116.1A			5.11	H	L/Elk					L	M	M		L
116.1B			5.11	M	L/Elk					L	L	M		L
116.1C		X	5.11	L	L/Lynx					L	L	L		L
157.1					N/G									L
159			5.11	H	L/Elk					M	H	M		L
119.1A		X	5.11		L/Lynx					L	L			L
119.1B		X	5.11		L/Lynx					L	L			L
119.1C		X	5.11		L/Lynx					L	L			L

Road #	Pvt access (X)	Currently Closed (X),(o) =open	Forest Plan Rx	Important for fuels mgmt/ fire sup.	Wildlife	AQ Ques. #	Decom miss. for wtr-shed	WIN Project	Maintenance for H2O	Important for sumr. rec.	Important for fall rec.	Maintain for timber mgmt.	Impact on fisheries / aquatics	Important for range mgmt
158		X	5.11	H	L/Lynx					L	L	M		L
118			5.11	H	L/Elk	2=H 4=M	X		X	M	H	H		H
118.1E		X	5.11		L/Lynx	3=H			X	L	L			L
118.2A			4.3	H	M/ Grous*	11=M	X			L	M	M		L
118.2D		X		H	H/ Gosh					L	L	M		L
118.2E		X		H	L					L	L	M		L
150			4.2	H	M*	4,6=H		X	X	H	H	H		H
150.2I	X	X	4.2		N/G					Pvt	Pvt	L		L
126		X/o	4.3	M	L/harden open spur					L	H	L		M
156			2.1	H	H*	1-3=H 4=M	X		X	H	H	L		L
154			4.2	H	H*	2.4=H		X	X	L	M	L		L
42			2.1	H	M*					M	H	H		H
48		O/spur	2.1	M	N/G					L	L			L
48.1		X	2.1		L/Lynx					L	L	M		L
48.1A		X	2.1	M	L/Lynx					L	L	M		L
48.1B		X	2.1	M	L/Lynx					L	L	M		L
48.1C		X	2.1	L	L/Lynx					L	L	L		L
49		X	2.1	H	L/Elk					M	M	M		H
49.1A		X	2.1	M	N/C					L	L	M		L
49.1B		X	5.13	H	L/Lynx					L	L	M		L
49.1C		X	5.13	M	L/Lynx					L	L	M		L
49.1D		X	5.13	M	L/Lynx					L	L	M		L
49.1E		X	5.13	M	L/Lynx					L	L	M		L
487.1		X	5.13							M	M			L
487.2B		X	5.13	H						L	L	H		L
487.2C		X	5.13	M	N/C					L	L	M		L
487.2D		X	5.13	M	N/C					L	L	M		L
487.3A		X	5.13	H	N/C					L	L	H		L
487.3B		X	5.13	L	N/C					L	L	L		L
496			3.31	H	L/Elk					M	H	M		L
Unclassified		X				4=H		X						

RATIONALE FOR RESOURCE MANAGEMENT PRIORITIES:

- H=High
- M=Moderate
- L=Low

Fuels Management and Access for Fire Suppression (Safety)

- H = Important for access to manage fuels and fire suppression
- M = Moderate importance for managing fuels and for fire suppression
- L = Roads is less important for managing fuels and for fire suppression

Wildlife Matrix- Effects on Wildlife (Positive, negative, assessment of effects).

Note *: An asterisk next to priority indicates specific recommendation.

General

- N/G = No specific concern, general effect in spruce-fir or aspen habitat
- N/C = No specific concern, maintain closure
- L = General effect and disturbance to wildlife. (Low*- Roads 163.1A: Maintain closure- obliterate or decommission to improve elk hunting success and decrease riparian impacts.)
- M = Important for elk calving and sandhill cranes nesting. Medium*- Maintain spring wildlife closure (April 15 – July 1) for Roads 42 and 150. (Rd. 150- Recommend road closure expansion to include North boundary of Slater Park.)
- H = Impacts boreal toad, cutthroat trout, sandhill crane habitats. Recommend decommissioning of revegetation. (High*-Rd. 156: recommend pulling trailhead back to road and hardening/trailhead, or improving/hardening crossing and road; and Rd. 154: recommend closing at road for private land access only and private land owner improve /harden stream crossing.)

Elk

- L/Elk = May be contributing to elk movement off of the forest due to hunting pressure in the fall, seasonal closure may alleviate.
- M/Elk = Ridgeline road – may contribute to early season elk movement off of the Forest, seasonal closure may alleviate.

Lynx

- L/Lynx = Increasing fragmentation in lynx habitat – recommend decommissioning or revegetation to improve.

Goshawk

- L/Gosh = Road is adjacent to historic goshawk territory – human use of road may impact future nesting.
- M/Gosh* = Road 110.4A is adjacent to goshawk nesting stand. Recommend drawing road back and closing at small pull-off just off 110
- H/Gosh = Impacting Northern goshawk nesting stand, recommend decommissioning or revegetation to mitigate.

Sharp-tailed grouse

- M/Grous*- Impacts sharp-tailed grouse habitat, recommend closure at junction of 118.1 and 118.2A

Hydrology and Soils (AQ question number)

- H = Known problems such as erosion, rutting, or obvious groundwater interception
- M = Less severe problems or moderate level of stability in valley-bottom roads
- L = Stable mid-slope roads
- X = Decommission for watershed; WIN project; or important for maintenance of water.

Recreation Summer, Fall, and Winter Priority

- H = High priority (summer or fall); part of summer loop routes; fall hunter use; no alternative routes
- M = Moderate priority; Some current summer use; some fall use

- L = Low priority; Closed; or low current use; or viable alternative route available

NOTE: No roads were listed in any recreational-use category. All roads had low winter use and were not listed in this matrix. In the winter, roads are physically closed to motorized use except snowmobiles. If a road is closed or decommissioned, the route may remain available for snowmobile use.

Timber Management

- H = High use for timber management (arterial and collector)
- M = Moderate-use of roads
- L = Roads rarely used

Impact on Fisheries and Aquatic Organisms

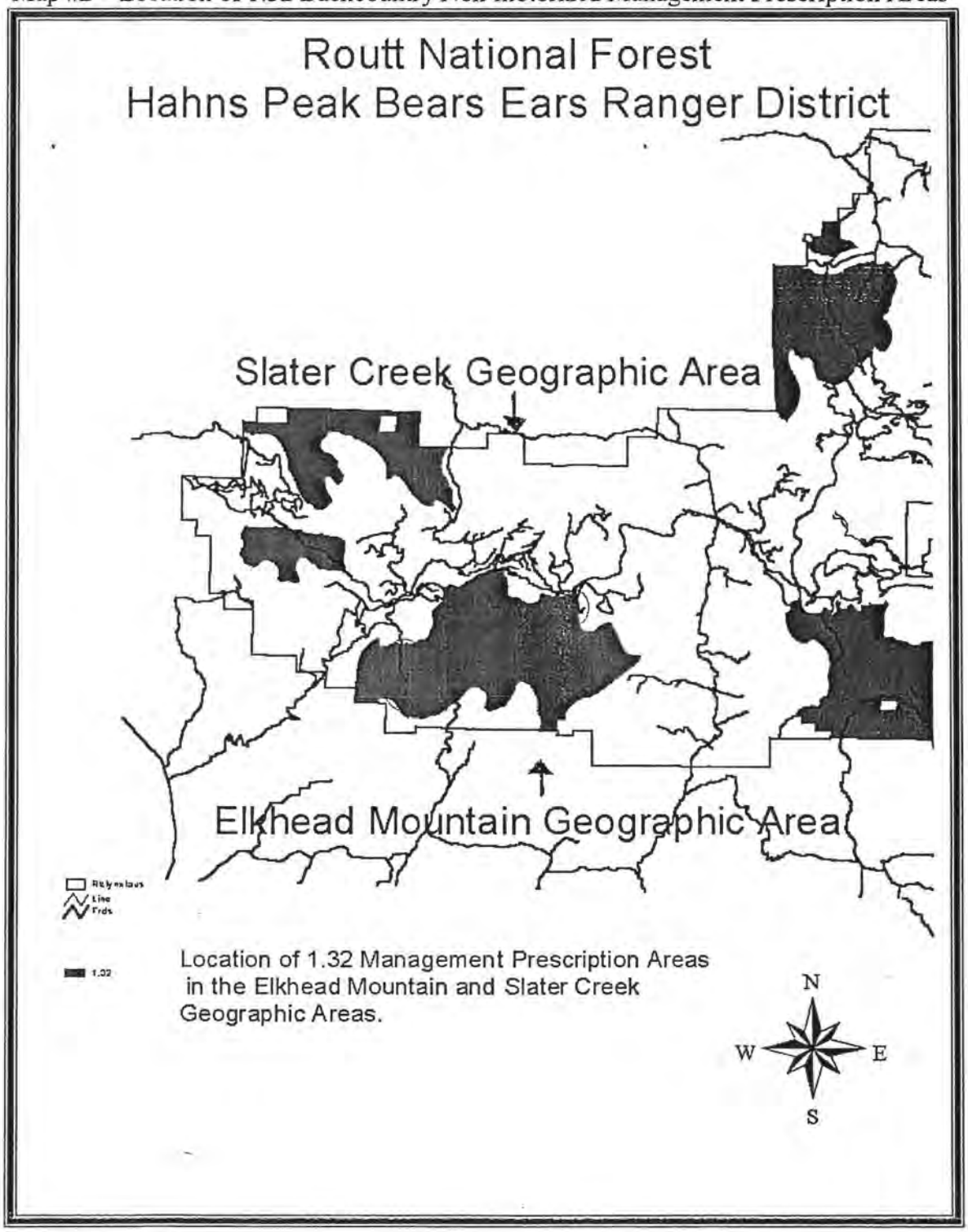
- H = Roads that severely impact fisheries or aquatic organisms
- M = Roads that moderately impact fisheries or aquatic organisms
- L = Roads that have less impact on fisheries or aquatic organisms
- X = Roads affect migration and movement of aquatic organisms.
- = Roads facilitating the introduction of non-native aquatic species.

Range Management

- H = Important for access to range allotments
- M = Other routes are available for access to allotments
- L = Roads rarely used by permittees

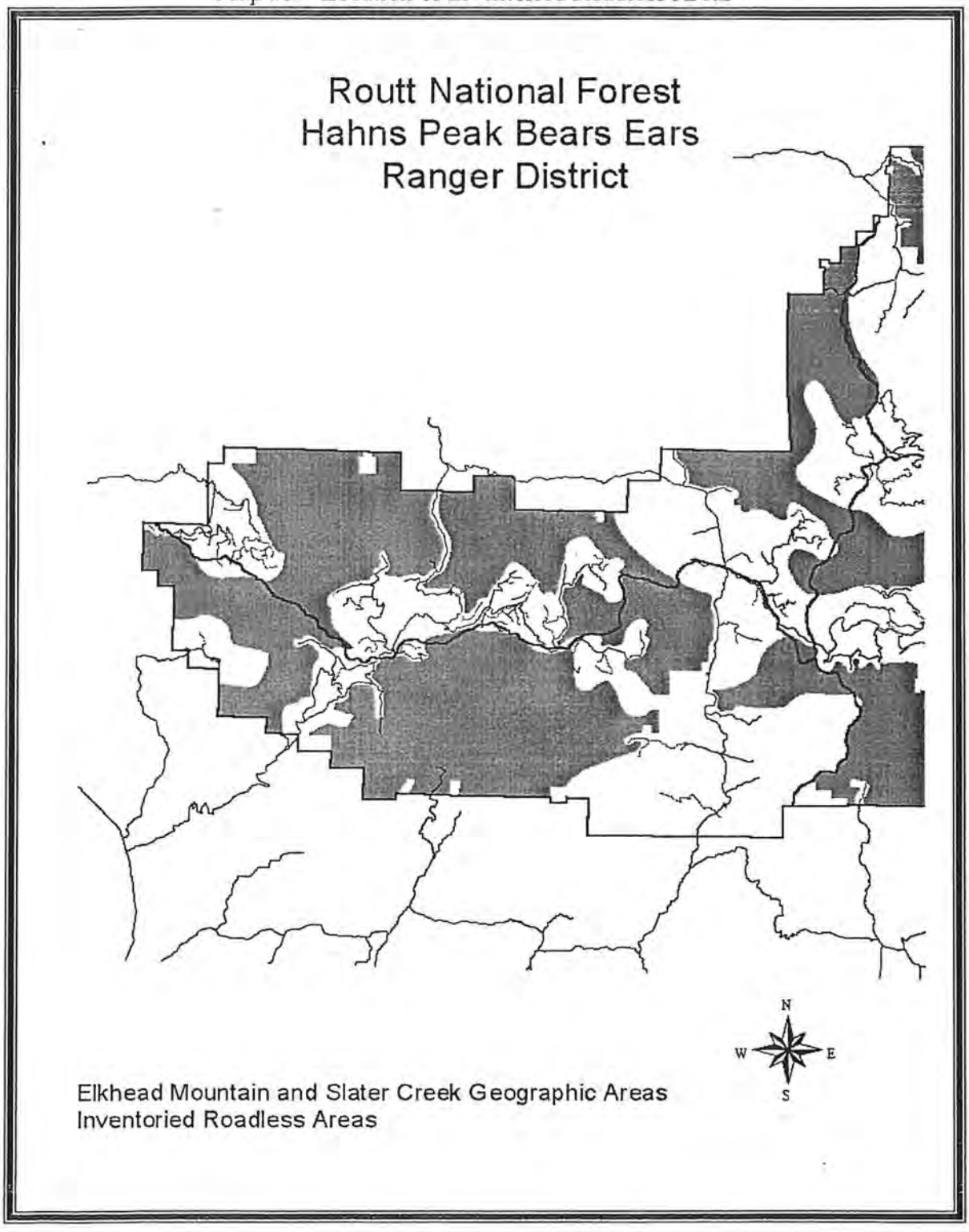
APPENDIX B: Maps

Map #2 – Location of 1.32 Backcountry Non-motorized Management Prescription Areas



APPENDIX B: Maps

Map #3 – Location of Inventoried Roadless Areas



Appendix C: Noxious Weeds Present on the Medicine Bow/Routt National Forests

Common Name	Scientific Name	Designated State Weed	Forest Priority*
Diffuse knapweed	Centaurea diffusa	WY, CO	1
Spotted knapweed	Centaurea maculosa	WY, CO	1
Russian knapweed	Centaurea repens	WY, CO	1
Leafy spurge	Euphorbia esula	WY, CO	1
Yellow toadflax	Linaria vulgaris	WY, CO	1
Dalmation toadflax	Linaria genistifolia	WY, CO	1
Saltcedar	Tamarix ramosissima	WY, CO	1
Hoary Cress	Cardia spp.	WY, CO	2
Musk thistle	Carduus nutans	WY, CO	2
Purple Loosestrife	Lythrum salicaria	WY, CO	2
Canada thistle	Cirsium arvense	WY, CO	3
Ox-eye-daisy	Chrysanthemum leucanthemum	WY, CO	3
Field bindweed	Convolvulus arvensis	WY, CO	3
Houndstongue	Cynoglossum officinale	WY, CO	3
Quackgrass	Agropyron repens	WY, CO	4
Skeletonleaf bursage	Ambrosia tomentosa	WY	4
Common burdock	Arctium minus	WY, CO	4
Plumeless thistle	Carduus acanthoides	WY, CO	4
Bull Thistle	Cirsium vulgare	WY, CO	4
St. Johnswort	Hypericum perforatum	WY, CO	4
Dyers woad	Isatis tinctoria	WY, CO	4
Perennial pepperweed	Lepidium latifolium	WY, CO	4
Scotch thistle	Onopordum acanthium	WY, CO	4
Perennial Sowthistle	Sonchus arvense	WY, CO	4
Horsenettle	Solanum carollinense	WY	4

* Forest Priority

Priority 1 indicates weeds of highest priority for treatment and eradication if possible on National Forest System Lands. In areas where known infestations of these weeds occur on adjacent non-Forest lands, prevention and monitoring activities will be given highest priority, and all efforts possible will be made to coordinate control efforts, and to cooperate with and encourage the adjacent land owner or manager to treat their infestations.

Priority 2 indicates weeds, which are increasing on National Forest System Lands. Efforts here will be to prevent new infestations and to contain or reduce existing infestations. Purple Loosestrife is not currently known to exist on the Medicine Bow-Routt, but its rapid increase on the front range makes our Forest a prime candidate for new infestations. Efforts here will be to spot infestations as soon as possible and to work toward eradication if infestations occur.

Priority 3 indicates weeds, which are so common and widespread that eradication is not possible. Efforts here will be directed toward prevention of new infestations.

Priority 4 indicates weeds, which are not currently known to occur on National Forest System Lands. Prevention will be the focus for these weeds.

APPENDIX B: Deferred Maintenance Costs

Still waiting on this information

Deferred maintenance cost table

APPENDIX C: Responsibility Table

The following reiterates Table 1 from the R2 Roads Analysis guidance with the addition of the 'Lead' listed in the last column. The Lead is the person responsible for seeing that this analysis question gets addressed in the analysis.

Table 1. Summary of Analysis Questions

(A)[i] Question #	(B) Topic	(C) Forest Plan	(D) Plan EIS	(E) Specific in EIS?	(F) Subforest/ Common Issue	(G) Page #	(H) Lead
EF1	Exotics						Robert
EF2	pest management						Robert
EF3/4	disturbances						Robert
EF5	Noise						Robert
AQ1	hydrology						Liz S.
AQ2	surface erosion						Liz/Tommy
AQ3	mass wasting						Liz/Tommy
AQ4	crossings						Liz S.
AQ5	chemical effects						Liz S.
AQ6	hydro connections						Liz S.
AQ7	beneficial uses						Liz S.
AQ8	wetlands						Liz S.
AQ9	Channel dynamics						Liz S.
AQ10	aqua. organisms						Kathy
AQ11	Riparian/litterfall						Liz S.
AQ12	at-risk species						Kathy
AQ13	non-native aquatic						Kathy
AQ14	unique species						Kathy
TW1	terrestrial habitat						Missy/Robert
TW2	human activities						Missy/Robert
TW3	legal/illegal activities						Missy/Robert
TW4	unique communities						Missy/Robert
EC1	Financial efficiency						NEPA Proj.
EC2	economic efficiency						NEPA Proj.
EC3	distribution						NEPA Proj.
TM2	suitable base						Kent
TM3	silvicultural treatment						Kent
TM1	logging systems						Kent
MM1	Minerals						Tommy

(A)[i] Question #	(B) Topic	(C) Forest Plan	(D) Plan EIS	(E) Specific in EIS?	(F) Subforest/ Common Issue	(G) Page #	(H) Lead
RM1	Range						Marnie
WP1	water facilities						Liz S.
WP2	municipal watershed						Liz S.
WP3	hydroelectric						Liz S.
SP1	special products						Lands
SU1	special uses						Lands
GT1	Access						Missy
GT2	other owners						Missy
GT3	shared ownership						Missy
GT4	Safety						Missy
AU1	Research, M&I						Missy/Robert
AU2	law enforcement						Robert
PT1	Fuels						Glenn
PT2	Safety						Glenn
PT3	wildfire cooperators						Glenn
PT4	air quality						Glenn
UR1	supply/demand						Rec Shop
UR2	unroaded opp's						Rec Shop
UR3	Noise						Rec Shop
UR4	Who participates?						Rec Shop
UR5	attachments						Rec Shop
RR1	supply/demand						Rec Shop
RR2	roaded opp's						Rec Shop
RR3	Noise						Rec Shop
RR4	Who participates?						Rec Shop
RR5	attachments						Rec Shop
PV1	unique characteris.						Missy
PV2	unique cultural						Joann
PV3	Groups						Joann
PV4	passive use value						Missy
SI1/2	needs/values roads						Robert
SI3	historical						Joann
SI4	Cultural						Joann
SI5	historic roads						Joann
SI6	economic health						Robert
SI7	community depend.						Robert

(A)[i] Question #	(B) Topic	(C) Forest Plan	(D) Plan EIS	(E) Specific in EIS?	(F) Subforest/ Common Issue	(G) Page #	(H) Lead
SI8	wilderness attribute						Robert
SI9	traditional uses						Robert
SI10	sense of place						Missy
CR1	civil rights						Missy

[i]

A *The question*
B *Abbrev. Topic label*
C *Typically, this question is used in the development of the FP*
D *Direction in EIS relates generally to this question*
E *Direction in EIS relates specifically to this question*
F *x = analysis should be done at subforest scale (read project level)*
yes = it is a common issue and you must address it in this analysis
no = it is not a common issue; address if raised in scoping
G *Page reference from Roads Analysis publication*
H *Suggested lead to address question -- to be done by IDT*

Appendix D: Documentation Table

Documentation Table for Step 4 of the Roads Analysis procedures. (from Miscellaneous Report FS-643).

Question #	Addressed in Analysis? (YES/NO)	If directly addressed, page # in Environmental Document; and/or S&G, or location in Forest Plan.	If indirectly addressed, location in Project Administrative Record.	Rationale for not addressing - location in Project Administrative Record.
EF1	Yes			
EF2	Yes			
EF3	Yes			
EF4	Yes			
EF5	Yes			
AQ1	Yes			
AQ2	Yes			
AQ3	Yes			
AQ4	Yes			
AQ5	Yes			
AQ6	Yes			
AQ7	Yes			
AQ8	Yes			
AQ9	Yes			
AQ10	Yes			
AQ11	Yes			
AQ12	Yes			
AQ13	Yes			
AQ14	Yes			
TW1	Yes			
TW2	Yes			
TW3	Yes			
TW4	Yes			
EC1	No			Will be answered in individual project EA/EIS
EC2	No			Will be answered in individual project EA/EIS
EC3	No			Will be answered in individual project EA/EIS
TM1	Yes			
TM2	Yes			
TM3	Yes			
MM1	Yes			
RM1	Yes			
WP1	Yes			
WP2	Yes			

WP3	Yes			
SP1	Yes			
SU1	Yes			
GT1	Yes			
GT2	Yes			
GT3	Yes			
GT4	Yes			
AU1	Yes			
AU2	Yes			
PT1	Yes			
PT2	Yes			
PT3	Yes			
PT4	Yes			
UR1	Yes			
UR2	Yes			
UR3	Yes			
UR4	Yes			
UR5	Yes			
UR6	Yes			
RR1	Yes			
RR2	Yes			
RR3	Yes			
RR4	Yes			
RR5	Yes			
RR6	Yes			
PV1	Yes			
PV2	Yes			
PV3	Yes			
PV4	Yes			
SI1	Yes			
SI2	Yes			
SI3	Yes			
SI4	Yes			
SI6	Yes			
SI6	Yes			
SI7	Yes			
SI8	Yes			
SI9	Yes			
SI10	Yes			
CR1	Yes			

Appendix E: Comments from Public Scoping

Comments Received on the Management of Roads and Trails in the California Park and Black Mountain Areas Brochure

- We have never used ATV's and we feel the closing of trail 1144 was a benefit to our hunting experience this past year. We noticed more animals in the Grizzly Park/Douglas Creek area and we feel it was a result of closing trails and the lack of logging.

- It is my opinion that the roads and trails in the study area should not be restricted any more than current. I don't currently own or use an ATV, however I may want to do so in the future and I don't want to see any more restriction that may limit the use of these vehicles by me in the future. I am a snowmobiler during the winter in the study area and one of my concerns is that a one size fits all rule will come down restricting the use of snowmobiles in the subject area. By closing roads and trails to motorized vehicles, hunters will be displaced to other areas rather than deal with the restrictions that does not reduce the elk population it reduces human population. Maybe the Division of Wildlife should look at some innovative ways to increase harvest.

- I do not think a total closure is in order. I do believe and understand the damage that can occur with wet trails, however at this time of the year, the trails were adequately frozen in the a.m. to where an ATV or other small weight vehicle would have done as much damage to one of the trails as the ATV would have done to a paved road. I restricted my hunt to areas close enough to pull the animal out by hand. I would suggest the trail closure ALLOW game retrieval on frozen roads and trails as an allowance to increase the harvest. I recommend a special hunting permit for hunters who did not fill their tags during the regular season. The DOW could guide hunters onto animals to thin the herd.

- I don't believe closing areas for a time will improve the management. Part of the problem of temporary closure often leads to permanent closure! Once we get permanent closure, multiple use is denied to many. Even with temporary, multiple use is denied to many.

- The restrictions would limit some of the early prime snowmobiling on the north side of Black Mountain.

- As a backpack elk hunter, I have had four-wheelers seriously affect my last two years of hunting in the Shield Mountain area. In 1999 and 2000, the elk were present in the area when we set up our camp. In both years we witnessed four-wheelers traveling off trail and the elk immediately left the area. I recommend closing the 496 road to all motorized vehicles, erosion has made the road nearly impassable. Perhaps the elk would not move as quickly to the Three Forks Ranch.

- Cattle cause as much or more soil erosion as motorcycles and ATV use. Are you going to kick them out too?

- I believe there are many factors that encourage elk to gather on Three Forks and Gold Blossom for the rut, none of which include motorized use in the area. The sheep drove us out of upper Johnson Creek maybe the elk didn't like them either.

- The archery hunters aren't pushing elk onto the private ranches the elk are there when the season starts. The ranchers cultivate the elk's presence on their property in many subtle ways and why not, its big money for them.

- Archery hunters followed by black powder muzzleloader hunters are harassing the herds in Area 4 and 5. It would be nice if the DOW would cut the number of hunters way down to stop harassing and chasing the herds. Don't close these roads to the public. Just limit the number of hunters and the length of the total hunting period to about six weeks total.

- It is only fair to keep the 1144 trail open to motorcycles and ATV's in this area, for it is the only motorized trail. In comparison to the Hahns Peak area which has many motorized trails.

- The spring closure of California Park for crane nesting season already limits the public's time spent in this area. The few roads open to the public does not hurt or chase any game animals by normal public use other than hunting. Let's urge the DOW to limit the number of hunters and especially the length of season to six weeks.

- The problem with easy access is that it attracts the slob hunters as was evident again this year. I now hunt only in areas banning motorized vehicles which is difficult, but rewarding.

- I think closing roads and trails would end my hunting if I had to walk further than we already did, because all the trails and roads were closed to ATV's and we could not use the ATV we brought along.

- I have witnessed private landowners and people who lease the adjacent land herding the elk through use of ATV's and on horseback onto their land so their clients could harvest these elk. Please enforce the law on game harassment so that there is elk on public land for all to hunt and enjoy.

- Closing trails and roads in a lot of areas would limit my hunting because of my age. An ATV is very handy to retrieve game.

Appendix H

This appendix it to serve as a way to document project implementation in the CPSIA. As projects are implemented, copies of the Decision Memo may be filed in this appendix as well.

Additionally several projects are listed that have been implemented since the initial development of the CPSIA working group in 1999. These projects are:

- 1999 – Construction of Elkhead riparian exclosure
- 2000, 2001, 2002 Roads Analysis scoping (brochure)
- 2000 – Sage brush seed collection and redistribution (Grouse Habitat Improvement)
- 2000 – Thurber Fescue seed collection (Grouse Habitat Improvement)
- 2000 – Removal of Elkhead riparian exclosure
- 2001 – Boreal toad breeding site exclosure
- 2001 – Soil compaction alleviation project (California park and Slater park) – 200ac
- 2001 – Slater creek improvement project at FDR 154
- 2001 – Rangeland seed drill 1200 acres (Grouse Habitat Improvement)
    - Hand Plant 5000 Thurber Fescue Plants. (Grouse Habitat Improvement)
- 2001 – Roads project – close and decommission FDR 150 east
- 2001 – Native grass and forb seed collection
- 2002 – Fertilize 120 acres of 2001 planting sites. (Grouse Habitat Improvement)
- 2002 – Establish and maintain electric fencing at Slater Creek rehab site
- 2002 – Add 5th set of rails to Boreal Toad Exclosure
- 2002 – Improvements at California Park GS.
- 2002 – RMEF and USFS Roads Projects
    - Closure and relocation of campsites
    - Improvement of first creek barriers
    - FDR 41, FDR 122, FDR 118, FDR 118 (Gate), FDR 49 (gate), FDR 154 (gate)
- 2002 – Thurber Fescue seed collection and redistribution
- 2003 – Veg treatment Monitoring (Grouse Habitat Improvement)
- 2003 – Roads Projects and dispersed campsite improvement
    - FDR 126, FDR 117, FDR 156, FDR 151
- 2003 – Gravel Pit evaluation
- 2003 – Riparian Plant Seed Collection
- 2003 – Osha plant monitoring
- 2003 – Boreal toad breeding site exclosure maintenance